



**Commonwealth of The Bahamas**

**Ministry of Education**

**Primary School Mathematics Curriculum Guidelines**

**Grades: 4-6**

**Department of Education  
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## ***Message from Acting Assistant Director of Education (Science and Technology Section)***

What helps students to develop a Mathematical outlook, is the processes to which they are exposed in the classroom. Mathematics, therefore, should not be merely a study of finite answers but rather an application of processes that aid in discovering and learning about the relationship between numbers and the world in which we live.

If our education system is to keep pace with scientific advancement, our students must be exposed to an effective and comprehensive mathematics education programme which presents opportunities for them to become actively involved and at the same time obtain the requisite knowledge, skills and attitudes necessary to compete both locally and globally in a scientific and technological society.

For this to be realized, the development and implementation of model mathematics curricula, strengthening the capacity of teachers and providing adequate science instructional supplies and facilities are paramount.

Mathematics teachers are therefore challenged to inspire, stimulate divergent thinking and provide the means for students to investigate based on what they know as well as what they wish to discover.

With each of us giving of and performing at our best, our students should be able to achieve our goal, which is, to develop competent citizens to provide an efficient and effective workforce needed to advance mathematics careers and professions so as to improve the quality of life for all.

Mr. Hamblin Newbold  
Acting Assistant Director of Education  
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## **PHILOSOPHY**

Mathematics is a vital component in the development of science, technology, industry, commerce, the day to day living in society/world and is essential to the quality of life of our people.

Mathematics requires thinking, reasoning, and understanding of principles, thoughts, ideas, and patterns in our environment. Therefore, emphasis should be placed in the development of mathematical concepts. Its specific focus is to prepare students to explore, discuss, develop, test, and apply mathematical concepts in the further growth and development of society.

### **OVERARCHING GOAL**

Students will develop self-confidence and display proficiency in logical, critical and analytical reasoning as well as become proficient in the use of technology and other mathematical tools. They will also demonstrate mastery of problem solving, communicating mathematically, working cooperatively, and learning to value mathematics while incorporating classroom experiences with real life situations.

### **SUB-GOALS**

The Mathematics programme, as outlined in the curriculum guidelines, requires that all students in The Bahamas achieve the following:

1. Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.
2. Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.
3. Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.
4. Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.
5. Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.
6. Collect, organize, and analyze data using statistical methods: predict results; and interpret uncertainty-using concepts of probability.

To achieve these sub-goals, all students must have many and varied experiences, through which they read, write, discuss, make conjecture, and test solutions to complex, practical problems.



This curriculum document is intended to foster an understanding of the “whys” of Mathematics as well as appropriately meet the current and future needs of the student population in schools across The Bahamas.

The use of current research in Mathematics and a working knowledge of entry requirements for programmes at The College of The Bahamas and Colleges in the United States, Canada, Great Britain and the University of the West Indies as well as adherence to our own goals, constituted the basis used by curriculum developers to formulate the objectives/content of this document.

It is our intention that teachers and parents use this document to guide their teaching of Mathematics, supplementing it with activities from texts and other resources to help our students attain the goals that are outlined in this document.

## MATHEMATICAL EXPECTATIONS GRADES 1-12 A DISCUSSION

In order to understand the expectations of the mathematics curriculum more fully, the curriculum writing team offers the following mathematics processing standards to consider as you strive to reach these goals with your students/children.

1. **Students will become mathematical problem solvers.** Every Mathematics lesson should have some element of problem solving to challenge the students. There are two main types of problems: routine and non-routine. Routine problems are usually application problems and can be solved by applying an operation of a formula. We teach children to reason and think critically with these problems when we work on reading for understanding. Teaching key words such as **‘altogether means to add,’ does not lead to understanding and is an inappropriate problem solving technique.** Asking students to draw a picture of what is happening in the story helps students make connections to the concept of the operations and involves reasoning. Have students apply developing problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding.

Non-routine problems tend to be more open-ended, may have more than one answer or solution and usually require a strategy to solve the problem. These problems require reasoning and not simply application of operations. A teacher with a well-balanced mathematics programme uses a combination of problems with his/her students.

2. **Students will be able to communicate mathematically.** In order for students to achieve this goal, they must be encouraged daily to communicate in class through small and large group discussions and writing. Oral and written presentations, creating their own story problems and **explaining HOW they arrived at solutions** are ideal ways to achieve this goal and are methods supported through the activities in this curriculum/resource guide.
3. **Students will develop self-confidence with Mathematics.** In order to develop self-confidence, students and teachers need to have success in Mathematics. Build on your students’ previous experiences and draw on your own.
4. **Students will learn to value Mathematics.** Students will achieve this goal over time if they see the enthusiasm for the subject. School-wide projects such as Math Day or “One Hundred Day” celebrations in primary schools and “Invention Day” in the high schools or national projects like Math at the Mall that will assist in developing this goal. Speakers with jobs that use Mathematics (which is most careers) are also helpful. Finding examples of Mathematics used properly or improperly on TV and in the newspapers is another worthwhile connection.
5. **Students will be able to make connections within the field of Mathematics, and with Mathematics in the real world.** Students should understand Mathematics as a necessary set of skills and concepts for the real world; therefore, teachers are encouraged to integrate Mathematics teaching with other subjects. Also when working with one strand, use skills from other strands. For example, **Statistics and Number Sense blend well together.**
6. **Students will learn to work cooperatively.** Most jobs that require a mathematical background are those where people must collaborate. Therefore, the activities in the curriculum support peer tutoring, cooperative learning, pairing of students, group projects, group presentations and activities in which each student in the class participates.

**7. Students will become more proficient in the use of technology and other mathematical tools.** While calculator and computers are the primary pieces of technology used in Mathematics, students should also learn how to use the rulers, compasses, protractors and other tools. In addition, students also need to learn which tool is appropriate for a given situation. These learning tools allow students to investigate mathematical ideas and to solve problems.

## HOW TO USE THIS GUIDE

Mathematics is a highly interconnected and cumulative subject. The Mathematics curriculum introduces skills and concepts in sequence, which contribute to and serve as building blocks for each other across grade levels. The curriculum also gives focus to important mathematics strands that will prepare students for continued study, and problem solving at school, home, and even work settings. Instead of seeing mathematics as a set of disconnected topics, students should be able to view, understand, and appreciate the relationships among mathematical skills and concepts. When students build connections and skills, their understanding deepens and expands.

Students should have opportunities to learn mathematical skills and concepts as they progress through the grades and as such, should not spend a significant part of their instructional time reviewing mathematics content. Teachers at each grade level should know what mathematics concepts their students have already studied and will study in future grades to ensure that topics and skills taught at the present grade level are aligned with the past and perceived mathematical experiences.

The objectives at each grade level are divided into 6 strands: **Number and Number Sense, Patterns, Functions and Algebra; Computation and Estimation, Measurement, Geometry, and Statistics & Probability.**

While each of the six strands deals with a different area of mathematics at the respective grade levels, objectives from the strands should be integrated. For example, while teaching computation, it is natural to look at patterns and concepts from number sense. While teaching statistics, it is natural to ask questions that will require students to compute data presented in graph form.

In the Scope and Sequence, there are acronyms to advise teachers when a skill is to introduced, developed, maintained, and advanced. The letter I = Introduce, D= Develop, M= Maintain, and A= Advance. Following the Scope and Sequence is a suggested pacing guide for each grade level. The pacing guide is to assist teachers in planning for the year in order to include all of the content necessary for meeting the standards in teaching mathematics. Teachers are reminded that there are at least 7 periods of Mathematics scheduled on the Time Table per week. Using the scheduled time wisely, will enable teachers to complete the content at their grade level. At the beginning of each Scope of Work are essential questions that will guide the teaching and learning of the strands. At the end of the strands, students should be able to answer all of the questions.

Teachers are not expected to teach the objectives in the order presented. Instead, teachers are encouraged to take the objectives and work them into their yearly plan in a manner that integrates the strands with one another, and with other subjects. There are an unlimited number of combinations and each teacher should put together lessons that allow students to make sense of the material presented. If students attain the learning objectives in the time frame given, then move on. If not, move on and use other avenues in the document that will allow students to acquire the knowledge and skills.

Teachers of grades 4-6 could begin the academic year with another strand other than Number and Number Sense if students would have been exposed to the skills earlier. During the period of 2005-2010, it has been proven (by the Primary Mathematics Unit) that students in the upper grades enjoy Measurement and Geometry Strands at the beginning of the academic year.

It is not feasible to list every objective in the pages of The Scope of Work of each strand in grades K-7 of the Mathematics Curriculum. Therefore, the Scope of Work for the year in which it is introduced at subsequent grade levels is reinforced and extended.

## THEORETICAL FRAMEWORK

The major theoretical framework that guides the Primary Mathematics Curriculum is the constructivist theory. Constructivism emphasizes a hands-on approach to mathematics where students are more actively involved with teachers in creating new meanings. Additionally, constructivism often utilizes collaboration and peer criticism as a way of provoking students to reach a new level of understanding. During instruction, teachers focus on having students make connections between facts and developing new understanding. Further, teachers modify their teaching strategies to students' responses which encourage students to analyze, interpret, and predict information. Teachers depend on open-ended questions for discussions and encourage extensive dialogue among students. The curriculum promotes the following:

- Acceptance of student independence and initiative
- Utilization of manipulatives, interactive, and physical materials.
- Use of cognitive terminology by teachers such as "classify," "analyze," and "create" when planning.
- Responses of students to drive lessons, shift instructional strategies, and alter content
- Inquiry concerning students' understanding of concepts before sharing their own understanding of those concepts
- Dialogue of students with the teacher and with one another
- Inquiry by asking thoughtful, open-ended questions and encourage students to ask questions of each other
- Elaboration of students' initial responses
- Allowance for wait time after posing questions
- Time for students to construct relationships and create descriptions.



## BENCHMARKS: GRADES 1-3

By the end of grade 3, all students should know and be able to perform the following:

- Recall the basic addition and subtraction facts (3 seconds or less per fact).
- Use addition and subtraction facts to solve problems.
- Use a calculator as a tool in problem solving.
- Explain the concept of tens and ones.
- Explain the relationship between number of parts and the size of fractions.
- Estimate and calculate sums and differences up to two digit numbers by applying strategies.
- Use a metric ruler to measure to the nearest centimeter.
- Tell time accurately.
- Identify common shapes by listing properties.
- Collect, organize and analyze data using a simple bar graph.
- Solve non-routine problems by applying strategies.

## **BENCHMARKS: GRADES 4-6**

By the end of grade 6, all students should know and be able to perform the following:

- Recall basic multiplication and division facts (3 seconds or less per fact)
- Estimate and calculate whole number and decimals products and quotients by applying strategies.
- Estimate and calculate fraction sums, differences, and products by applying strategies.
- Explain the relationship among whole numbers, fractions, decimals, and percents.
- Estimate and measure length, volume, area, mass, and temperature in metric units.
- Classify types of triangles, quadrilaterals, and angles by properties.
- Use a fraction-type calculator as a tool.
- Collect, organize and analyze data using several types of graphs and measures of central tendencies (mean, median, mode, and range)
- Make reasonable predications about the outcomes of an event using simple probability rules.

## DEFINITION OF CURRICULUM TERMS

<b>Overarching Goal</b>	Outlines the intended purpose of the curriculum document. It defines the overall outcome of the curriculum, in this case the Primary Mathematics Curriculum.
<b>Sub-goals</b>	Indicate the main objective for the various strands of the curriculum.
<b>Standards</b>	Outline learner outcomes and expectations for each sub-goal. They indicate student progression from one attainment level to another.
<b>Scope and Sequence</b>	A map outlining the objectives for each level, showing the progression and overview of the work to be accomplished.
<b>Scope of Work</b>	Develops each objective with suggested content, activities, assessment and resources to facilitate and enhance the teaching/learning process.
<b>Skills</b>	Learned capacity to carry out pre-determined results often with the minimum time. The following skills are central to Mathematics: researching, evaluation, analysis, synthesis, application, comparing and contrasting, role-playing, interpreting, and calculating.
<b>Concepts</b>	Scheme or plan for Mathematics. Key mathematical concepts include addition, subtraction, division, multiplication, and fractions,
<b>Attitudes</b>	Way a person views something or tends to behave towards it. Mathematical attitudes include showing confidence in using mathematics, perseverance in solving problems, a positive attitude, and a willingness to work. These attitudes will enable success in the teaching and learning of mathematics.
<b>Content Standards</b>	Cover what students are to learn in various subject areas, such as Mathematics and Science.
<b>Performance Standards</b>	Specify what levels of learning are expected.
<b>World-class Standards</b>	Content and performances that are expected of students in other industrialized countries. This term is also attached to the movement in the United States to bring U.S. students' academic achievement and knowledge on par with students' accomplishments in the other industrialized countries.
<b>Essential Questions</b>	Develop foundational understandings. They provide the fundamental organizing principles that bound an inquiry and guide the development of meaningful, authentic tasks. Essential questions have several key components:



- Attempts to answer essential questions and allow people to explore the connection between their personal, individual, unique experience of the world and its exterior, objective, held-in-common dimensions. In exploring essential questions together, people are able to find expression for their own strongest gifts and interests at the same time that they are able to establish a sense of community with others.
- Essential questions allow us to explore what knowledge is, how it came to be, and how it has changed through human history.
- An essential question is always posed at the boundary of the known and the unknown. While permitting fruitful exploration of what others before us have learned and discovered, attempts to answer an essential question open up mysteries that successively reveal themselves the more we come to "know".
- An essential question reaches beyond itself. It is embedded in ideals of freedom, strength, and possibility that permit people to come-to-know without becoming trapped in constructs that are unfair or no longer useful. Essential questions arise from an implicit commitment to human efficacy: to a belief that individuals can make a difference, that knowledge can both be acquired and changed.
- An essential question engages the imagination in significant ways. Without imagination, we could not ask the questions that drive science forward. We would have no art, no stories, no mathematics, no philosophy. Moreover, it is questions that spark the imagination that permit young and old to journey together into unknown realms. Imagination knows no bounds, no restrictions; nor do the questions we pose when we cultivate our powers of imagination. An essential question that arises from imaginative engagement is an important way to bring teacher, student, and subject matter together in ways that enrich all three.

## DEFINITION OF STRANDS

The National Council of Teachers of Mathematics (NCTM) proposed six strands/standards that are content oriented. For the content standards/strands, the goals are further broken down into objectives.

**Number and Number Sense:** Deals with the proficiency of numbers and understanding of how numbers operate. It involves an understanding of how different types of numbers, such as fractions, decimals, and percent are related to each other, and how each can best be used to describe a particular situation. Further, it includes the more traditional category of school mathematics curriculum called numeration (process of counting or numbering) and thus includes the important concepts of place value, number base (decimal, multiple, binary) magnitude, and approximation and estimation. Knowing how to represent numbers, recognizing 'how many' are in a group, and using numbers to compare and represent, paves the way for grasping number theory, place value and meaning of operations and how they relate to one another. This strand emphasizes the understanding of numbers, number patterns, counting, and estimation. Such understanding is best developed through purposeful, concrete experiences and the use of manipulatives.

**Patterns, Functions, and Algebra:** Algebra is the ability to sort, order objects or numbers, and recognize and build on simple patterns. Algebra provides the language through which one communicates the patterns in mathematics. Algebra is more than a set of procedures for manipulating symbols. It provides a way to explore, analyze, and represent mathematical concepts and ideas. Additionally, it describes relationships that are purely mathematical or ones that arise in real-world phenomena and are modeled by algebraic expressions. From the earliest age, students should be encouraged to investigate the patterns that they find in numbers, shapes, and expressions, and, by doing so, make mathematical discoveries. They should have opportunities to analyze, extend, create a variety of patterns, use pattern-based thinking to understand and represent mathematical and other real-world phenomena. The function concept is one of the most fundamental unifying ideas of modern mathematics. Students begin their study of functions in the primary grades, as they observe and study patterns. As students grow and their ability to abstract matures, students form rules, display information in a table or chart, and write equations which express the relationships they have observed. In high school, they use the more formal language of algebra to describe these relationships. Learning algebra helps students make connections in varied mathematical representations, mathematics topics, and disciplines that rely on mathematical relationships.

The Pattern, Functions, and Algebra strand develops student ability to recognize, represent, and solve problems involving relations among quantitative variables (unknown letter). The key algebraic models in the curriculum are linear, exponential, power, polynomial, logarithmic, rational, and periodic functions. Each algebraic model is investigated in four linked representations - verbal, graphic, numeric, and symbolic - with the aid of technology. Attention is also given to modeling with systems of equations, both linear and nonlinear, and to symbolic reasoning and manipulation.

**Computation and Estimation:** Estimation is a process that is used constantly by mathematically capable adults, and one that can be easily mastered by children. It involves an educated guess about a quantity or an intelligent prediction of the outcome of a computation. The growing use of calculators makes it more important than ever that students know when a computed answer is reasonable. The best way to make that determination is through the use of strong estimation skills. Equally important, is an awareness of the many situations in which an approximate answer is as good as, or even preferable to an exact one. Students can learn to make these judgments and use mathematics more powerfully as a result.

**Geometry:** Stresses the development of students' spatial awareness through active involvement in working with two- and three-dimensional shapes. The primary goal of the geometry strand is to develop visual thinking and student ability to construct, reason with, interpret, and apply mathematical models of patterns in visual and physical contexts.

Geometry is a natural place for the development of students' reasoning and justification skills. The focus is on describing patterns with regard to shape, size, and location; representing patterns with drawings or coordinates; predicting changes in shapes under geometric transformations; and organizing geometric facts and relationships through deductive reasoning. Geometric ideas are useful in representing and solving problems in other areas of mathematics and in real-world situations. Geometric representations can help students make sense of area and fractions. Bar graphs and scatter plots (a graph of plotted points that show the relationship between two sets of data) can give insights about data.

**Measurement:** Accentuates the investigation of concepts such as length, area, volume, capacity, mass, time, and temperature. Students begin to learn how to measure by working with non-standard units and then progress to using the basic metric and customary units. Students also become familiar with telling and computing elapsed time (the amount of time that has passed since a particular process started). Telling time and using money link to an understanding of the number system and represent an important life skill. Measurement offers an opportunity for learning and applying other mathematics skills, including number operations, geometric ideas, statistical concepts, and functions. It highlights connections within mathematics and connections between mathematics and areas outside mathematics, such as Social Studies, Religious Studies, Science, Music, Art, and Physical Education.

**Statistics and Probability:** Emphasizes the collection, organization, and interpretation of data. The primary role of the statistics and probability strand is to develop students' ability to analyze data intelligently, to recognize and measure variation, and to understand the patterns that underlie probabilistic situations. The ultimate goal is for students to understand how inferences can be made about a population by looking at a sample from that population. As children collect information about the world around them, they will find it useful to display and represent their knowledge in the form of tables and graphs. Utilizing probability, students need to understand the fundamental concepts so that they can interpret weather forecasts, avoid unfair games of chance (gambling, buying raffle tickets), and make informed decisions about traveling or going on a field trip. They should regularly be engaged in predicting and determining probabilities, often based on experiments (like flipping a coin 100 times), but eventually based on systematic counting strategies. High school students should use probability models and solve problems involving compound events and sampling. Probability is also linked to other mathematical content areas such as counting techniques (number and operation), ratios of areas and volumes (geometry), and relationships between functions and the area under their graphs (algebra, data analysis).

## PROBLEM SOLVING

### FOUR PHASES IN SOLVING A PROBLEM

In solving any problem, it helps to have a working procedure. You might want to consider this four-step procedure: *Understand, Plan, Try It, and Look Back.*

- **Understand:** Before you can solve a problem you must first understand it. Read and re-read the problem carefully to find all the clues and determine what the question is asking you to find.

What is the unknown?

What are the data?

What is the condition?

- **Plan:** Once you understand the question and the clues, it's time to use your previous experience with similar problems to look for strategies and tools to answer the question.

Do you know a related problem?

Look at the unknown! And try to think of a familiar problem having the same or a similar unknown?

- **Try It:** After deciding on a plan, you should try it and see what answer you come up with.

Can you see clearly that the step is correct?

But can you also prove that the step is correct?

- **Look Back:** Once you've tried it and found an answer, go back to the problem and see if you've really answered the question. Sometimes it's easy to overlook something. If you missed something check your plan and try the problem again.

Can you check the result?

Can you check the argument?

Can you derive the result differently?

Can you see it at a glance?

## **Problem Solving Skills in Mathematics**

- Estimation and approximation
- Mental calculation
- Communication
- Use of mathematics tools
- Arithmetic manipulation
- Algebraic manipulating
- Handling data
- Choose the Operation
- Draw Conclusions
- Estimate Exact Answer
- Interpret the Remainder
- Make Generalizations
- Solving Multi-Steps Problems
- Reasonable Answers
- Sequence Events
- Too Much/Too Little Information
- Use a Table/Graph
- Identifying Relationships

## **Problem Solving Strategies**

- Draw a Picture
- Make a Table
- Look for a Pattern
- Make an Organized List
- Try, Check, Revise
- Write a Number Sentence
- Act it Out
- Use Reasoning
- Work Backward
- Solve a Simpler Problem
- Make a Graph

## BEST PRACTICES IN IMPROVING STUDENT ACHIEVEMENT IN MATHEMATICS

Best practices in mathematics focus on allowing students to be actively *doing mathematics* so they can build and enhance their understanding of mathematical ideas. The following links will provide more information on current NCTM math standards and best practices in mathematics. Programs should provide a curriculum that is based on research findings on how best to improve student achievement in mathematics. Those findings are summarized by Grouws and Cebulla in an ERIC Digest, January 2002. Programmes should be designed to offer supplemental instruction, which expands students' exposure to mathematical skills and concepts. Strong correlations between opportunity to learn (OTL) and the mean of student achievement scores is documented in several international studies cited by Grouws and Cebulla. Other best practices identified in this study include:

- Daily problem-solving inclusive of multiple steps problems
- Opportunities to discover and invent new knowledge
- Opportunities for student interaction and discussion
- Whole-class discussion following individual and group work
- Instructional focus on number sense
- Provision of differentiated classroom instruction using a variety of instructional methods and intervention.
- Use of manipulatives and technology
- Use of cooperative learning strategies/peer tutoring
- Integration of mathematics strands and other subjects
- Use of probing and questions skills
- Lessons that are student oriented
- Link to prior knowledge
- Fostering active inquiry and supportive interaction

- Emphasizing the real life relevance of Mathematics
- Monitoring students' progress and revise their instructional plan as needed.
- Allowing students to reason mathematically and to communicate and justify their thinking.
- Drawing on students' discovery and creativity to keep them interested.

### **Suggested Strategies to Improve Numeracy in the Primary School**

- Give pre and post tests from grades 1-6. Pre-tests are given at the beginning of the academic year and are used to assess and group students according to their needs and direct teaching practices. Teachers of grade 4 should use the Grade Level Assessment Test (GLAT) results to identify weaknesses and strengths of their students.
- Teach to the needs of each group of students during guided mathematics activities.
- Integrate mathematics across the curriculum.
- Give tests at the end of a concept or unit. This will identify students learning and the effectiveness of teacher strategies/practices
- Give post-test at the end of the school year to determine students' successes.
- Record results from the assessments in teachers' Mark Book, portfolios, and formal reports.
- Host Mathematics competitions to give students the opportunity to compete with their peers and solidify skills and concepts taught.
- Teacher training/upgrading in mathematics instruction.

## ASSESSMENT STRATEGIES

### The Assessment Principle

Assessment should support the learning of mathematics, furnish useful information to both teachers and students, and be more than merely a test at the end of instruction to gauge learning. It should be a part of instruction that guides teachers and enhances students' learning.

Teachers should continuously gather information about their students through questions, interviews, writing tasks and other means. They can make appropriate decisions about such matters as reviewing materials, reteaching a difficult concept, or providing something more or different for students who are struggling or need enrichment.

Assessment is the standardized process of measuring students' performance to gather information for future developmental use. At the primary school level, National Examinations are used to assess the status of the CURRICULUM to gather qualitative information that pinpoint and diagnose strengths and weaknesses. As the examinations are diagnostic in nature, for the students to excel, they must initially be exposed to all the content areas across each strand of the Mathematics curriculum as this aspect of teaching and learning is critical to their overall success. Assessment should focus on understanding as well as procedural skills. Students learn in different ways, therefore, multiple ways of assessment should be utilized.

Secondly, students must become confident in their ability to apply the skills across all of the cognitive levels of learning. Alexander Bloom (1956), identified six levels within the cognitive domain which must be acquired if students are going to fully develop their critical thinking skills. These levels range from the simple recall or recognition of facts, as the lowest level to the analyzing and judgment of material that is classified as the highest level. The levels and accompanying skill structures are as follows:

**Knowledge:** Is remembering previously learned material or information. At this level, all that is required is the recall or bringing to mind the information that was previously taught.

**Comprehension:** Is the ability to grasp the meaning of material. This skill assesses the students' ability to effectively manipulate information. Mastery of this skill is shown by the students ability to effectively:

- translate material from one form to another (words to numbers etc.),
- interpret material (explain or summarize procedures etc.),
- estimate future trends (predicting consequences or effects and/or draw mathematical conclusions).

Learning outcomes at the comprehension level go one step beyond the simple remembering of material, and represent the lowest level of understanding.

**Application:** Is the ability to use previously learned material or information in new and or concrete situations. This includes the application of such things as:

- rules



- methods
- concepts
- principles
- laws
- theories

Learning outcomes in this area require a higher level of understanding than those under comprehension.

**Analysis:** Is the ability to break down material into its component parts so that its organizational structure may be understood. This includes:

- the identification of the individual parts of geometrical shapes, structures and units;
- the analysis of the relationships between parts and of parts to the whole structure or unit;
- recognition of the organizational principles involved in the operation of the individual parts and the structure or unit as a whole.

Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material presented.

**Synthesis:** Is the ability to put parts together to form a new whole. This involves the:

- assembling or creating of a graph, table, geometric shape, patterns etc.
- organizing or arranging of a set of objects with abstract relations (scheme for classifying information etc.).
- putting together a plan of operation (research proposal)
- production of a speech, play, recital etc.

Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.

**Evaluation:** Is the ability to judge the value of material (statement, novel, poem, research report etc.) for a specific purpose. The judgments are to be based on definite criteria which the student may determine or be given. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all the other categories, plus conscious value judgments based on clearly defined criteria. Additionally, national assessments expose students to various types of questions. Hence, students must develop an appreciation for answering appropriately different types of questions among which could be found the following types of questions:

- **MULTIPLE CHOICE QUESTIONS:** Questions of the four option type that consist of a stem with one correct answer and three distracters.
- **MATCHING QUESTIONS-ONE-TO-ONE PAIRING:** Column aligned questions in which students must match options in column 'A' with those in column 'B'.

- **SHORT ANSWER / COMPLETION QUESTIONS:** Questions that require the completing of a statement or question using a single word or a well-constructed sentence, or a multi-faceted mathematical process
- **STRUCTURED QUESTIONS:** Questions in which sub-question branches follow from a common stem with the easiest question first and the difficulty level increasing with the progression of the structure. These would include such skills as the interpretation of information from graphs and follow through questions.
- **FREE RESPONSE (ESSAY) QUESTIONS:** Questions that require explanation, discussion or calculation on material for which the examiner has not provided a pattern of response. In their response to this type of question, the students are expected to demonstrate communication, planning and organizational skills.

Exposure to the various questioning types allows for an in-depth assessment of students knowledge on the various subject matters as well as their ability to apply critical thinking skills. Further, National Assessments promote the use of timed tests. As success in this mode requires discipline on the part of the students, continual practice in working with timed tests and quizzes throughout the school year will provide students with regular practice in working within the allocated time frames for the various components of the examination. Given continued exposure to all curriculum content areas, the different levels of the assessment objectives, the various questioning techniques and timed tests/ quizzes on a continual basis, students will be equipped with the skills and practices that are necessary to prepare them mentally and physically to confidently write National Examinations.

## PROBLEMS OF THE DAY (POD)

Students of all ages should be given the challenge to solve problems in mathematics class everyday. It is only through solving problems that they will become proficient problem solvers. Therefore, to help teachers find appropriate grade level problems, in the appendix is a collection of about 100 problems for your grade level. **Some problems have the answers and for others you have the opportunity of working them out with your students.**

How you use these problems is up to the individual teacher. Below are a few suggestions:

- i. Post a Problem of the Day (POD) in your classroom every morning and let students work on it individually or in groups throughout the day and for homework. The next day, discuss the previous day's solution and post a new POD.
- ii. Start each mathematics class with a POD. Let student work on it when they finish assignments. Discuss solutions at the end of the class.
- iii. Set aside 15 minutes per day for students to work in assigned groups on the POD.
- iv. Post a POD every other day and let students work on it after they complete other class assignments
- v. Assign a POD for homework and give extra credit to students who show evidence of attempting a solution.
- vi. Post the same POD for an entire grade level every day or every other day. Let students collect points for every problem well attempted. Which class gathers the most points?
- vii. Open every faculty meeting or department meeting with a POD just for fun!

### Problem of the Day

Give students a problem daily. Instead of solving the problem, break down the task. This makes it easier to model all steps in the problem-solving process. Students can

- tell what the question is asking them to do
- underline key words in the question that indicate the mathematical operation to be performed
- delete extraneous information
- identify the parts in the question
- find the best problem-solving strategy and explain why it is the best
- describe two different ways a problem could have been solved
- have students develop questions from graphic information

- share student-generated questions
- ask other students to solve the problem and justify their answers

**\*NOTE:** No matter how you use your PODs, it is imperative that there be a class discussion of the solution(s) where students present solutions with justifications.

**\*\*NOTE:** It is fun to solve problems with the class when you do not know the solution in advance Try it!

**Commonwealth of The Bahamas**

**Ministry of Education**

**Scope and Sequence**

**Primary School Mathematics  
Grades K-7**

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM  
NUMBER AND NUMBER SENSE**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
1. Identify and count “how many” in sets of objects.	I	D	D	M	A	A	M	A
2. Identify , count, write, and associate numerals and number words.	I	D	D	M	A	A	M	A
3. Connect number words and numerals to the quantities they represent (using various physical models).	I	D	D	M	A	A	M	D
4. Identify, write, and count using Roman Numerals.				I	D	A	D	M
5. Develop a sense of the position and magnitude of whole numbers and differentiate between the various classes of numbers e.g. cardinal and ordinal numbers, odd and even numbers, prime and composite, and triangular numbers etc.			I	D	D	D	D	M
6. Identify various representations of the same number /quantity and generate them by composing, and decomposing numbers.		I	D	D	M	M	M	A
7. Identify and use number values and place values within the base-ten number system.	I	D	D	A	A	D	M	M
8. Represent and compare whole numbers, decimals, and percents.				I	D	D	D	M
9. Identify and represent commonly used fractions such as $\frac{1}{4}$ , $\frac{1}{3}$ , and $\frac{1}{2}$ . and use models, benchmarks, and equivalent forms to judge the size of fractions.		I	D	D	M	M	A	M
10. Relate/name fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers.			I	D	A	D	M	D
11. Identify, name/write equivalent forms of commonly used fractions, and decimals, and find percentages of different amounts.				I	D	D	A	M
12. Compare and order fractions, decimals, and percents and find their approximate locations on a number line.				I	D	D	A	M

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM  
NUMBER AND NUMBER SENSE**

**Sub-goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions (**Continued**)

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
13. Simplify and convert fractions, decimals and percents.				I	D	A	A	M
14. Identify, write, and convert improper fractions to mixed numbers.				I	D	D	A	M
15. Compare and order fractions, decimals, and percents.				I	D	D	M	M
16. Explain the meaning of addition, subtraction, multiplication, and division and identify them with the specific vocabulary of each rule of number.	I	D	D	A	A	D	M	M
17. Use multiplication arrays to differentiate between various multiplication problems.			I	D	D	A	M	M
18. Explore positive and negative integers on a number line.							I	D
19. Identify and differentiate between prime and composite numbers.						I	D	D
20. Find the LCM and HCF of numbers.						I	D	D
21. Identify and use ratios and proportions to represent quantitative relationships.				I	D	A	A	D
22. Use appropriately exponential notations.						I	D	D
23. Describe integers, represent, and compare quantities with them.						I	D	D
24. Identify squares and square roots of numbers.						I	D	D
25. Use factors, multiples, prime factorization to solve problems.				I	D	A	M	M

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM**

**PATTERNS, FUNCTIONS, AND ALGEBRA**

**Sub-goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
1. Sort, classify, and order objects by size, amount, and other properties.	I	D	A	A	M	D	D	A
2. Identify, describe, and extend various patterns such as sequences of sounds, shapes, or simple numeric patterns, and analyze how both repeating and growing patterns are generated.	I	A	A	A	M	D	D	A
3. Use concrete, pictorial, and verbal representations to develop an understanding of invented and conventional symbolic notations.				I	D	D	M	A
4. Model situations that involve addition and subtraction of whole numbers, using objects, pictures, and symbols.				I	D	D	M	A
5. Identify and construct rectangular, triangular, oblong, L-shaped numbers.					I	D	D	M
6. Describe qualitative change using various attributes	I	D	D	M	A	A	D	D
7. Describe, extend, and generalize about geometric and numeric patterns.		I	D	M	A	A	D	D
8. Represent and analyze patterns and functions using words, tables, and graphs.			I	D	M	A	A	D
9. Identify and illustrate general principles and properties as commutative, associative and distributive, and use them to compute with whole numbers.				I	D	D	M	M



**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM**

**PATTERNS, FUNCTIONS, AND ALGEBRA**

**Sub-goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results **(Continued)**

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
10. Represent a variable as an unknown quantity using a letter or a symbol.						I	D	D
11. Express Mathematical relationships using equations						I	D	D
12. Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions		I	D	D	M	A	A	D
13. Represent, analyze, and generalize a variety of patterns with tables, graphs, and words.		I	D	D	A	A	D	M
14. Use symbolic algebraic notations to represent situations and solve problems.							I	D

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM  
COMPUTATION AND ESTIMATION**

**Sub-goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
1. Add and subtract whole numbers, decimals, and money, and explain their effects.		I	D	A	A	A	M	M
2. Estimate and round numbers and use the strategies to add, subtract, multiply, and divide whole numbers, decimals and money.				I	D	A	M	M
3. Explain and demonstrate situations that entail multiplication and division, such as sharing equally and equal groupings of objects. .				I	D	D	M	A
4. Develop and use strategies for whole–number computations, with focus on addition and subtraction.		I	D	M	A	M	M	M
5. Use a variety of methods and tools to compute, including: objects, mental computation, estimation, paper, pencil, and calculators.		I	D	M	A	M	M	A
6. Use the divisibility rule for division.						I	D	M
7. Explain how to multiply and divide whole numbers.			I	D	D	M	A	M
8. Describe and create relationships between operations, using division as the inverse of multiplication, to solve problems.			I	D	D	M	A	M
9. Explain and use properties of operations, such as the distributives of multiplication over addition.						I	D	D
10. Develop fluency with basic number combinations for multiplication and division, and use these combinations to compute mentally related problems such as 30 X 50.				I	D	M	A	A
11. Develop fluency in adding, subtracting, multiplying and dividing whole numbers.				I	D	M	M	A
12. Choose and use appropriate strategies to estimate the results of whole number computations and judge the reasonableness of each result.					I	D	M	A

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM**

**COMPUTATION AND ESTIMATION**

**Sub-goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division and multiplication (**Continued**).

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
13. Apply and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experience.				I	D	A	D	M
14. Use visual models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals.				I	D	M	M	A
15. Select appropriate methods and tools for computing whole numbers: mental computation, estimation, use of calculators, paper and pencil regarding the context and nature of the computation.			I	D	M	A	A	M

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM**

**MEASUREMENT**

**Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

Key: I = Introduce, D = Develop, M = Maintain, A = Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
1. Explain and model attributes of length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring.	I	D	D	A	A	D	M	M
2. Identify the attributes of length, volume, weight, area, perimeter and time, and compare and order objects according to these attributes	I	D	D	A	A	D	M	M
3. Measure objects using non-standard units e.g. multiple copies of units of the same size, such as paper clips laid end to end.		I	M	A	D	A	M	A
4. Differentiate and use standard units: customary and metric.		I	M	A	D	A	M	A
5. Develop common referents (similarities) to measure and make comparisons and estimations.	I	D	D	M	M	A	A	D
6. Identify relationships among units and convert from one unit to another within the same system.				I	D	D	M	M
7. Explore what happens to measurements of a two-dimensional shape such as perimeter and area when the shapes change in some way.					I	D	D	M
8. Identify coins and bills, and make change for given amounts.		I	A	D	D	A	D	M

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM**

**MEASUREMENT**

**Sub-goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy (**Continued**)

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
9. Use strategies for estimating the perimeters, areas, and volumes of irregular shapes.				I	D	D	M	M
10. Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and size of angles.					I	D	D	M
11. Use formulas to find the area of rectangles and related triangles and parallelograms.						I	D	M
12. Develop strategies to determine the surface areas and volumes of rectangular solids.							I	D
13. Identify, select, and use units of appropriate methods for estimating measurements.						I	D	M
14. Select and apply techniques and tools that would accurately find length, area, volume, and angle (measures should be precise).					I	D	M	A
15. Use formulas to determine the circumference of circles and the area of triangle, parallelograms, trapezoids, and circles.							I	D
16. Solve simple problems related to measurement.	I	D	D	M	A	A	D	M

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM  
GEOMETRY**

**Sub-goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
1. Identify, name, build, draw, compare, and sort two- and three-dimensional shapes.	I	D	D	A	A	D	M	M
2. Describe attributes and parts of two-and three-dimensional shapes.		I	D	D	M	A	A	D
3. Investigate and predict the results of putting together and taking apart two-and three-dimensional shapes.			I	D	D	M	A	D
4. Name, describe, interpret relative positions in space, and apply ideas to relative position.		I	D	D	M	D	M	A
5. Find and name locations in coordinate systems such as maps.	I	D	D	A	M	D	D	A
6. Identify and apply slides, flips, and turns to objects and shapes.			I	D	M	D	M	A
7. Identify and create shapes that have symmetry	I	D	D	M	A	A	M	D
8. Create mental images of geometric shapes using spatial memory and spatial visualization.			I	D	D	A	D	M
9. Identify and represent shapes from different perspectives.	I	D	D	A	M	D	D	A
10. Relate ideas in geometry to ideas in number and measurement.				I	D	D	M	A
11. Identify geometric shapes and structures in the environment and specify their locations.	I	D	D	A	M	M	D	D
12. Identify, compare and analyze attributes of two-and three-dimensional shapes and develop vocabulary to describe the attributes.				I	D	D	M	A
13. Classify two-and three-dimensional shapes according to their properties and develop definitions of classes of shapes such as triangles and pyramids.					I	D	D	M
14. Investigate, describe, and reason about the results of subdividing, combining, and transforming shapes.						I	D	D

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM  
GEOMETRY**

**Sub-goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space (**Continued**).

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
15. Describe location and movement using common language and geometric vocabulary.					I	D	D	M
16. Make and use coordinate systems to specify locations and to describe paths.				I	D	D	M	M
17. Explore congruence and similarity.						I	D	D
18. Make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusions.							I	D
19. Find the distance between points along horizontal and vertical lines of a coordinate system.						I	D	D
20. Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.						I	D	D
21. Describe a motion or a series of motions that will show that two shapes are congruent.						I	D	D
22. Identify and describe line and rotational symmetry in two-and three-dimensional shapes and designs				I	D	D	M	A
23. Build and draw geometric objects.	I	D	D	A	A	M	D	D
24. Create and design mental images of objects, patterns, and paths.				I	D	D	M	A
25. Identify and build a three-dimensional object from two-dimensional representations of that object.			I	D	D	M	A	A
26. Use geometric models to solve problems in other areas of mathematics, such as number, and measurement.				I	D	D	A	M
27. Identify geometric ideas and relationships and apply them to other disciplines and problems that arise in the classroom or in everyday life.				I	D	D	A	M
28. Describe, classify, and understand relationships among types of two-and three dimensional objects using their defining properties.						I	D	D

**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM  
GEOMETRY**

**Sub-goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space **(Continued)**.

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

<b>Objectives</b>	<b>Preschool</b>	<b>Grade 1</b>	<b>Grade 2</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>	<b>Grade 6</b>	<b>Grade 7</b>
29. Explain relationships among the angles, side lengths, perimeters, areas, and volumes of similar objects.						I	D	D
30. Use coordinated geometry to represent and examine the properties of geometric shapes.						I	D	D
31. Describe sizes, positions, and orientation of shapes under informal transformation such as flips, turns, and slides.					I	D	D	M
32. Identify and apply geometric ideas and relationships in areas outside the mathematics classroom, such as art, science, and every day life.				I	D	D	M	M



**SCOPE AND SEQUENCE  
MATHEMATICS CURRICULUM  
STATISTICS AND PROBABILITY**

**Sub-goal 6:** Collect, organize and analyze data using statistical methods: predict results; and interpret uncertainty-using concepts of probability.

Key: I = Introduce, D= Develop, M= Maintain, A= Advance

Objectives	Preschool	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
1. Pose questions and gather data about themselves and their surroundings.	I	D	D	M	M	A	D	M
2. Sort and classify objectives according to their attributes and organize data about the objects.	I	D	D	M	M	A	D	M
3. Represent data using concrete objects, pictures, and graphs.	I	D	D	M	M	A	D	M
4. Describe parts of the data and the set of data as a whole to determine what the data show.			I	D	D	M	M	A
5. Discuss events related to students' experiences as likely or unlikely.	I	D	D	A	M	M	A	D
6. Collect data using observations, surveys, and experiments.			I	D	D	M	M	A
7. Represent data using tables and graphs such as bar graphs and line graphs.			I	D	A	D	M	M
8. Describe the shape and important features of a set of data and compare related data sets, with emphasis on how the data are distributed.					I	D	D	M
9. Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.						I	D	D
10. Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.						I	D	D
11. Describe events as likely or unlikely and discuss the degree of likelihood with such words as <i>certain, equally, likely, and impossible</i> .				I	D	A	M	M
12. Predict the probability of outcomes of simple experiments and test the predictions.				I	D	A	M	M
13. Formulate questions, design studies, and collect data about a characteristic shared by two populations or different characteristics within one population.					I	D	D	M



# **Primary School Mathematics**

## **Suggested Pacing Guide**

**Grades: 4-6**

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 4**

STRAND	TOPICS	DURATION				
		Day 1		2	1	2
		35 mins.	60 mins.	Days	Week	Weeks
Number and Number Sense	1. Numerals and Word Names Up to Millions			√		
	2. Place Value of Digits In Whole Numbers			√		
	3. The Role of The Numerator and Denominator In Fractions		√			
	4. Relationship Between Fractions and Whole Numbers			√		
	5. Reading and Writing Equivalent Fractions			√		
	6. Comparing Fraction, Decimals and Whole Numbers			√		
	7. Simplify Fractions			√		
	8. Fractions and Decimals Using Concrete Material			√		
	9. Writing and Illustrating Mixed Numbers			√		
	10. Writing Decimals Through Thousandths			√		
	11. Representing a Decimal as Part of a Whole			√		
	12. Writing Roman Numerals to M			√		
	13. Interpreting the Language of Mathematics In Problem Solving		√			
Patterns, Functions, and Algebra	1. Pictorial and Numeric Patterns			√		
	2. Pattern of Remainders In Division by 2, 3, and 4			√		
	3. Non-routine Problems: Finding a Pattern			√		
	4. Counting to 100 by 6s, 7s, and 8s			√		
	5. The Difference Between Odd and Even Numbers		√			
	6. Creating Squared Numbers			√		

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 4**

STRAND	TOPICS	DURATION				
		Day 1		2 Days	1 Week	2 Weeks
35 mins.	60 mins.					
<b>Computation and Estimation</b>	1. Rounding Whole Numbers to The Nearest Thousand			√		
	2. Rounding Decimals to The Nearest Whole, Tenth, and Hundredth			√		
	3. Multiplication and Division Facts: Three Seconds		√			
	4. Solving Multiplication Story Problems			√		
	5. Division as the Inverse of Multiplication		√			
	6. What a Remainder Means in a Division Problem					
	7. Three- Digits Dividend by One Digit Divisor				√	
	8. The Product of Two-Digits				√	
	9. Subtracting Columns of Numbers: Three -Digit Numbers			√		
	10. Through Estimation, Adding, and Multiplying, Up to Two Digits by Three Digits			√		
	11. Mixed Numbers with Like Denominators Without Regrouping			√		
	12. Solving Problems Involving Addition and Subtraction of Fractions			√		
	13. Like Denominators in Fractions			√		
	14. Solving One and Two Step Problems Involving the Four Operations				√	
<b>Measurement</b>	1. Measuring Length in Kilometres, Metres, Decimetres			√		
	2. Relationship Among the Metric Units		√			
	3. Converting Metric Units of Length, Mass and Capacity					√
	4. Measurement Using Millitre and Litre			√		
	5. Using Grams and Kilograms to Estimate and Determine Mass			√		
	6. The Concept of Volume			√		
	7. Selecting The Appropriate Unit for Estimating and Measuring Volume		√			
	8. Volume Concept of a Litre by Construction			√		
	9. Problems: Addition and Subtraction of Metric Units			√		
	10. Reading the Thermometer in Celsius and Fahrenheit			√		
	11. Calculating Area of Objects and Shapes Using Appropriate Units			√		
	12. Calculating the Area of Rectangles Using Arrays			√		
	13. Measuring and Calculating Perimeter of Objects and Shapes			√		
	14. Measuring Time Needed to Perform a Task		√			

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 4**

STRAND	TOPICS	DURATION				
		Day 1		2	1	2
		35 mins.	60 mins.	Days	Week	Weeks
Measurement	15. Using A.M. and P.M. Appropriately		√			
	16. Writing Time to the Nearest Minute			√		
	17. Writing Time to Twenty-Four Hour Clock			√		
	18. Converting Hours to Minutes and Vice Versa				√	
	19. Solving Problems Involving Elapse Time				√	
	20. Solving Real World Problems				√	
Geometry	1. Naming and Drawing Points, Line, Segments, Rays and Angles			√		
	2. Identifying Right, Acute, and Obtuse Angles				√	
	3. Identifying Parallel and Perpendicular Lines				√	
	4. Identifying Shapes with Multiple Lines Of Symmetry				√	
	5. Translating Reflection and Rotation				√	
	6. Identifying and Drawing up to 10 Sided Polygons				√	
	7. Faces, Edges, and Vertices on a Given Solid				√	

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 4**

STRAND	TOPICS	DURATION				
		Day 1		2	1	2
		35 mins.	60 mins.	Days	Week	Weeks
Statistics and Probability	1. Using Graph Data on a Line Graph			√		
	2. The Different Uses of Bar and Line Graphs		√			
	3. Recording, Organizing, and Analyzing Data For Bar and Line Graphs			√		
	4. Calculating the Average Arithmetical Mean of a Set of Data			√		
	5. Averaging /Mean of a Set of Data Using Mental Arithmetical			√		
	6. Identifying The Mode, Median, and Range of a Set of Data				√	
	7. Simple Experiment and Record Probability			√		
	8. Writing Probability as a Fraction or Ratio			√		

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 5**

STRAND	TOPICS	DURATION				
		Day 1		2	1	2
		35 mins.	60 mins.	Days	Week	Weeks
Number and Number Sense	1. Numerals and Word Names to Millions			√		
	2. Place Value of Digits in Whole Numbers			√		
	3. Ordering Whole Numbers, Fractions, and Decimals			√		
	4. Fractions, Decimals, Whole Numbers in Ascending and Descending			√		
	5. Difference, Between Even/ Odd Numbers			√		
	6. Terms Sum, Difference, Product, Quotient, Factor, Divisor			√		
	7. Equivalent Fractions and Decimals				√	
	8. Simplifying Fractions to Lowest Terms				√	
	9. Relationship Between, Fractions and Whole Numbers				√	
	10. Writing Decimals Through Thousandths				√	
	11. Fractions to Decimals and Vice-Versa			√		
	12. Rounding Decimals to Nearest Tenths, Hundredths and Thousandths			√		
	13. Decimals as Part of a Whole			√		
	14. Ordering of Decimals Through Thousandths			√		
	15. Identifying Factors and Multiples			√	√	
	16. Identifying L.C.M and G.C.F of Two Numbers				√	
	17. L. C. M and G.C.F			√		
	18. Products of Prime Numbers Using Exponential Notation				√	
	19. Interpreting the Language of Mathematics in Problem Solving				√	

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 5**

STRAND	TOPICS	DURATION				
		Day 1		2	1	2
		35 mins.	60 mins.	Days	Week	Weeks
Patterns, Functions, and Algebra	1. Describing and Extending Numerical and Geometric Patterns 2. Using Concrete Objects Pictures or Numbers				√	
				√		



**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 5**

STRAND	TOPICS	DURATION				
		Day 1		2 Days	1 Week	2 Weeks
		35 mins.	60 mins.			
Computation and Estimation	1. Using Answers to Solve Single and Multi-Step Problems				√	
	2. Using Several Methods to Solve Problems Including Rounding				√	
	3. Rounding to the Nearest Tenth, Hundredth and Thousandth				√	
	4. Recalling Basic Addition, Subtraction, Multiplication and Division Facts			√		
	5. The Meaning of Multiplication and Division in Words and Pictures			√		
	6. Multiplying up to Two Digits by Three Digits				√	
	7. Applying Different Forms of Division			√		
	8. Dividing up to Four Digit Dividends by Two-Digit Divisor			√		
	9. Using Divisibility Rules For 2, 3, 5, and 10		√			
	10. Multiplying and Dividing by Multiples and Powers of 10		√			
	11. Checking Answers to Multiplication and Division Problems				√	
	12. Applying the Rules of Order of Operations				√	
	13. Adding and Subtracting Fractions and Mixed Numbers					√
	14. Solving Problems Involving Addition and Subtraction of Decimals					√
	15. Solving Whole Numbers Decimals and Money Computation Problems				√	

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 5**

STRAND	TOPICS	DURATION				
		Day 1		2 Days	1 Week	2 Weeks
		35 mins.	60 mins.			
Measurement	1. Measuring Length Using Metric Units-Kilometre, Metre			√		
	2. Metric Measure Using Decimals			√		
	3. Solving Problems Involving Linear Measure			√		
	4. Measuring Perimeter of Objects		√			
	5. Linear Measure Using Multiples and Submultiples			√		
	6. Describing the Circumference of a Circle		√			
	7. Calculating the Area of Rectangles and Squares			√		
	8. Differentiating Between Applications of Area and Perimeter		√			
	9. Measuring Volume With Appropriate Units			√		
	10. Expressing Millimetres as Litres			√		
	11. Solving Problems With Capacity Measures			√		
	12. Standard Units to Estimate			√		
	13. Solving Problems Involving Mass Measurement			√		
	14. Comparing and Measuring Time			√		
	15. The Relationship Among Seconds, Minutes, Hours		√			
	16. Recording the Data in SI Format		√			
	17. Writing Times to the Nearest Minute on a Twelve Hour Clock			√		
	18. Converting Hours to Minutes and Vice Versa			√		
	19. Solving Problems Involving Elapsed Time			√		
	20. Converting From Degrees Celsius to Fahrenheit			√		

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 5**

STRAND	TOPICS	DURATION				
		Day 1		2	1	2
		35 mins.	60 mins.	Days	Week	Weeks
Geometry	1. Describing Points, Lines, and Line Segments			√		
	2. Open and Closed Curves			√		
	3. Estimating the Various Sizes of Different Angles			√		
	4. Measuring Angles to 180° Using a Protractor				√	
	5. Using the Sum of Angles in a Circle and on a Straight Line			√		
	6. Classifying Polygons Up to 10 Sides			√		
	7. Differences Between Regular and Non-Regular Polygons				√	
	8. Using Various Motions as a Translation				√	
	9. Identifying Acute, Obtuse, and Right Angles				√	
	10. Investigating, Classify, and Naming Solid Shapes				√	
Statistics and Probability	1. Finding the Mean, Median, Mode and Range			√		
	2. Analyzing Data to Make Decisions			√		
	3. Interpreting Double Bar Graphs			√		
	4. Interpreting Venn Diagrams			√		
	5. Verifying by Doing Trials in an Experiment			√		
	6. Fraction and Ratio			√		
	7. Situations Involving Chance			√		

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 6**

STRAND	TOPICS	DURATION				
		Day 1		2 days	1 week	2 weeks
		35 min	60 min			
<b>Number and Number Sense</b>	1. Writing Numbers Through Billions		√			
	2. Numbers Through Billion Using the Symbols <, >, and =		√			
	3. Writing the Differences Between Factors and Multiples		√			
	4. Representing Integers on the Number Line			√		
	5. Products of Prime Numbers Using Exponential			√		
	6. Factors to Find LCM and HCF			√		
	7. Square Roots of Non-Perfect Squares			√		
	8. Using HCF to Simplify Fractions			√		
	9. Identifying Decimals Through Thousandths			√		
	10. Ordering Whole Numbers, Fractions and Decimals			√		
	11. Equivalent Relationship Among Fractions, Decimals & Percent			√		
	12. Comparing Two Sets of Data Using Ratios and Appropriate Notations			√		
	13. Representing Ratios in Decimal Form			√		
	14. Identifying Pi As a Special Ratio			√		
<b>Patterns, Functions, and Algebra</b>	1. Constructing Patterns Relating to Rectangular, Square, Oblong			√		
	2. Solving Non-Routine Problems Using Finding a Pattern as a Strategy			√		
	3. Using Patterns to Make Computation More Efficient			√		
	4. Using Pictures and Abstraction			√		
	5. Solving Story Problems Using Algebraic Equations				√	

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 6**

STRAND	TOPICS	DURATION				
		Day 1		2 days	1 week	2 weeks
		35 min	60 min			
Computation and Estimation	1. Using Several Methods Including Rounding			√		
	2. The Divisibility Rules for 2, 3, 4, 10			√		
	3. Using Mental Math Strategies in Addition, Subtraction, Multiplication and Division			√		
	4. Calculating Using Addition, Subtraction, Multiplication and Division			√		
	5. Multiplying and Dividing Money			√		
	6. Applying Rules of Order of Operations			√		
	7. Simplifying Fractions			√		
	8. Rules of Addition and Subtraction to Fractions and Mixed Numbers			√		
	9. Multiplication to Fractions			√		
	10. Converting From Fractions to Decimal to Percent				√	
	11. Rules of Addition Subtraction, Multiplication and Division to Decimals				√	
	12. Solving Problems Using Fractions and Decimals				√	
	13. The Relationship Between Fractions, Decimals, and Percents				√	
	14. Computing the Percent of a Number				√	
Measurement	1. Measurement of Length, Volume, Capacity, Temperature, or Mass				√	
	2. Temperature in Metric Units			√		
	3. Measurement Which Require The Conversion of Units					√
	4. Expressing Metric Measure Using Decimal Notation			√	√	
	5. Other Countries Measure (time and money)		√			
	6. Recording the Date in SI Format		√			
	7. Solving Non-Routine Problems Involving Measures			√		
	8. Area and Perimeter		√			
	9. Solving Problems Using Km/Hr			√		
	10. Interpreting Scales On Maps			√		
	11. Measuring Area of Regular and Irregular Polygons			√		

**MINISTRY OF EDUCATION  
PRIMARY SCHOOL MATHEMATICS CURRICULUM  
TOPIC PACING GUIDE  
GRADE: 6**

STRAND	TOPICS	DURATION				
		Day 1		2	1	2
		35 mins.	60 mins.	Days	Week	Weeks
<b>Geometry</b>	1. Types of Quadrilaterals and Their Properties			√		
	2. Naming Triangles as Scalene, Isosceles, and Equilateral			√		
	3. Classifying and Naming Triangles as Right, Acute, and Obtuse			√		
	4. Symmetry in Polygons			√		
	5. Parts of a Circle			√		
	6. Identifying Motions as Translation, Reflection of Rotation			√		
	7. Angles Through Measurement and Estimation as Acute, Obtuse			√		
<b>Statistics and Probability</b>	1. Types of Graphs Most Suitable for Display			√		
	2. Collecting, Organizing, Graph, and Analyzing a Set of Data			√		
	3. Interpreting Circle Graphs			√		
	4. Solving Problems Involving Mean, Median and Mode			√		
	5. Verifying the Probability of an Outcome and Writing it as a Fraction			√		
	6. Using Probability to Make Reasonable Predictions			√		
	7. Describing a Fair Game`			√		



# **Scope of Work**

## **Primary School Mathematics**

### **Grade 4**

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

**Essential Questions**

1. How does place value help me understand numbers?
2. How can we compare and contrast numbers?
3. What are the different ways to read and write a number?
4. What is the relationship between fractions and whole numbers?
5. How do you simplify a fraction?
6. What is the importance of using and interpreting the language of mathematics in problem solving?



**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT														
1. Write numerals and word names up to millions.	<ul style="list-style-type: none"> <li>A number tells you how many or how much, a number can be written in words or symbols. The symbols 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are called digits.</li> </ul> <p>Example: 4 636 192 = four million six hundred thirty-six thousand, one hundred ninety-two</p>	<ul style="list-style-type: none"> <li>Tell how greater numbers are used in everyday life. e.g.: distance to other countries, lengths, height, population of cities etc.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Teacher's Edition Volume pg. 58</li> </ul>	<ul style="list-style-type: none"> <li><b>Discussion:</b> What is the difference between the way you would write 900,000, the way you would write 90,000 and the way you would write 9,000 in standard form?</li> <li>Discuss other numbers in the same way.</li> </ul>														
2. Identify place value of digits in whole numbers up to the millions.	<ul style="list-style-type: none"> <li>You can write numbers in different ways e.g. Standard form, expanded form, and word form. E.g.: <b>Standard form</b> = 248,  <b>Expanded form</b> = 200 + 40 + 8  <b>Word form</b> = two hundred forty eight.</li> <li>Vocabulary: digits, standard form, expanded form and word form</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Million</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Hundred thousand</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Ten thousand</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Thousands</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Hundreds</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Tens</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Ones</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">6</td> <td style="text-align: center;">1</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3</td> <td style="text-align: center;">9</td> <td style="text-align: center;">2</td> </tr> </table> <p><b>Note:</b> 6 is in the hundred thousands place. The value of 6 is 600,000</p>	Million	Hundred thousand	Ten thousand	Thousands	Hundreds	Tens	Ones	4	6	1	5	3	9	2	<ul style="list-style-type: none"> <li>Use a place value chart to show larger numbers.</li> <li>Tell and write the value of a digit using base ten blocks. <b>Game:</b> "It's in the bag"</li> <li>Students make and play a place value game. The directions can be found on page 58 unit 1, Harcourt Math Bk. 3 Volume 1.</li> <li>Practice reading and writing numbers in the three forms.</li> <li>Use place value models to show and read numbers.</li> <li>Use place value chart and number line to show larger numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Volume 1</li> </ul>	<ul style="list-style-type: none"> <li>Write the place value positions of the zeros in the number 70,010 (thousands, hundred, ones).</li> <li><b>Lesson Quiz:</b> Write in standard form Eg: 80,000 (eighty thousand). 3,000 (three thousand).</li> <li>Write numbers in expanded and word form. Less Quiz Eg. 300 090= 300 000 +90</li> <li>-Fifty one thousand- 51000</li> </ul>
Million	Hundred thousand	Ten thousand	Thousands	Hundreds	Tens	Ones												
4	6	1	5	3	9	2												

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Identify and explain the role of the numerator and denominator in fractions.	<ul style="list-style-type: none"> <li>The numerator tells how many parts are being counted.</li> <li>The denominator tells how many equal parts are in the whole.</li> </ul> <p>Eg: <math>\frac{5}{9}</math> numerator  denominator</p>	<ul style="list-style-type: none"> <li><b>Concentration Match Game:</b> <ol style="list-style-type: none"> <li>Have students match a fraction with the pictorial representation.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"><math>1/2</math></div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <div style="display: flex; justify-content: space-around;"> <div style="width: 15px; height: 15px; border: 1px solid black; background-color: white;"></div> <div style="width: 15px; height: 15px; border: 1px solid black; background-color: black;"></div> </div> </div> </div> </li> </ul>	<ul style="list-style-type: none"> <li>Mathworksheet.com</li> </ul>	<ul style="list-style-type: none"> <li><b>Journal Writing</b>  Draw and write the fraction for a part of a group or part of a shape. Explain your answer.</li> </ul>
4. Explain the relationship between fractions and whole numbers.	<ul style="list-style-type: none"> <li>Whole numbers can be expressed as fractions. E.g 4 – whole number  <math>\frac{4}{1}</math> -fraction</li> <li>Fractions such as <math>2/2</math> as <math>3/3</math> are equal to 1 whole.</li> <li>Fractions are extension of the place value system.</li> </ul>	<ul style="list-style-type: none"> <li>Have students cut apples or oranges to show fractions.</li> </ul>	<ul style="list-style-type: none"> <li>Fractional Cutouts</li> </ul>	<ul style="list-style-type: none"> <li>Have students write in Math Journal explaining the relationship between fractions and whole numbers using examples.</li> </ul>
5. Identify, read and write equivalent fractions (Continued).	<ul style="list-style-type: none"> <li>Two or more fractions that name the same amounts are called equivalent fractions.</li> </ul>		<ul style="list-style-type: none"> <li><b>Fraction Monkey</b>  <a href="http://www.sums.cook/playground/n6a/playground.htm">www.sums.cook/playground/n6a/playground.htm</a></li> </ul>	<ul style="list-style-type: none"> <li>Quiz</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																											
5. Identify, read, and write equivalent fractions.	<ul style="list-style-type: none"> <li>Multiply the numerator and denominator by the same number to find an equivalent fraction.  e.g. <math>\frac{1}{4} \times 2 = \frac{2}{8}</math>  <math>\frac{1}{4} = \frac{2}{8}</math></li> <li>Another way to find equivalent fractions is to use fraction strips. E.g.  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td colspan="3" style="text-align: center;">1</td></tr> <tr><td style="text-align: center;">1/4</td><td></td><td></td></tr> <tr><td style="text-align: center;">1/8</td><td style="text-align: center;">1/8</td><td></td></tr> </table> </li> <li>Both <math>\frac{1}{4}</math> and <math>\frac{2}{8}</math> name the same part of a whole.</li> </ul>	1			1/4			1/8	1/8		<ul style="list-style-type: none"> <li><b>Fraction Monkey:</b> Students match equivalent fractions. <ul style="list-style-type: none"> <li>Divide students into groups.</li> <li>Place fraction flashcards and its equivalent face down on the table.</li> <li>The group that finishes first with the correct responses is the winner.</li> </ul> </li> <li>Using a model to show equivalent fractions. <b>Step 1</b> <ul style="list-style-type: none"> <li>Start with the bar for 1 whole line up two <math>\frac{1}{3}</math> bars for <math>\frac{2}{3}</math>.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td colspan="6" style="text-align: center;">1</td></tr> <tr><td colspan="2" style="text-align: center;">1/3</td><td colspan="2" style="text-align: center;">1/3</td><td colspan="2" style="text-align: center;">1/3</td></tr> <tr><td style="text-align: center;">1/6</td><td style="text-align: center;">1/6</td><td style="text-align: center;">1/6</td><td style="text-align: center;">1/6</td><td style="text-align: center;">1/6</td><td style="text-align: center;">1/6</td></tr> </table> </li> <li><b>Step 2</b> <ul style="list-style-type: none"> <li>Use <math>\frac{1}{6}</math> bars to match the length of the bars for <math>\frac{2}{3}</math>.</li> </ul> </li> <li><b>Step 3</b> <ul style="list-style-type: none"> <li>Count the number of <math>\frac{1}{6}</math> bars that make up <math>\frac{2}{3}</math>: Write the equivalent fraction. Count <math>\frac{1}{6}</math> , <math>\frac{2}{6}</math> , <math>\frac{3}{6}</math> , <math>\frac{4}{6}</math></li> </ul> </li> </ul>	1						1/3		1/3		1/3		1/6	1/6	1/6	1/6	1/6	1/6		
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1/4																															
1/8	1/8																														
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1/6	1/6	1/6	1/6	1/6	1/6																										

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
6. Order and compare fractions, decimals, and whole numbers up to millions using the symbols =, >, and <.	<ul style="list-style-type: none"> <li>• Numbers are compared to decide which of the 2 numbers is greater or less than.</li> <li>• Use these symbols.               <ul style="list-style-type: none"> <li>a. Greater than &gt; <math>\frac{1}{4} &gt; \frac{1}{9}</math></li> <li>b. Less than &lt; <math>0.1 &lt; 0.25</math></li> <li>a. Equal to = <math>\frac{1}{4} = \frac{2}{8}</math></li> </ul> </li> <li>• You can order numbers by comparing the digits in the same place value position from left to right. <b>Example:</b> 1364; 1364: 1634: 1694</li> </ul>	<ul style="list-style-type: none"> <li>• Use the number line to compare numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3</li> <li>• enVisionMath Bk. 3 pg. 315</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Discussion:</b> How would you compare 786 and 787 to find the greater number?</li> </ul>
7. Simplify fractions (Continued).	<ul style="list-style-type: none"> <li>• A fraction is in its simplest form when the numerator and denominator have no common factor other than 1. e.g. Write 4/12 in simplest form by dividing twice.   <math display="block">\frac{4}{12} \div \frac{2}{2} = \frac{2}{6}</math> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Interactive fraction Games:</b> Students play on line games where they simplify fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3 Teacher's Edition Volume 2 pg. 514 G</li> <li>• mathisfun.com</li> <li>• funbrain.com</li> <li>• coolmath4kids.com</li> </ul>	<ul style="list-style-type: none"> <li>• Write fractions in simplest form</li> </ul>

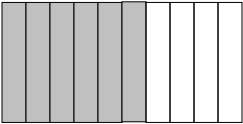
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
7. Simplify fractions.	<p>* 4 and 12 are both even. Two is a common factor.</p> $\frac{2}{6} \div \frac{2}{2} = \frac{1}{3}$ <p>* 2 and 6 are both even numbers. Two is the greatest common factor. Divide the numerator and the denominator by the greatest common factor.</p> <p>Write 4/12 in simplest form by dividing by 4.</p> $\frac{4}{12} \div \frac{4}{4} = \frac{1}{3}$ <p>In simplest form, <math>\frac{4}{12} = \frac{1}{3}</math></p>			

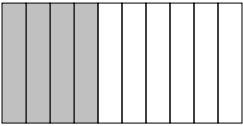
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
8. Equate fractions and decimals using concrete material or pictorial.	<ul style="list-style-type: none"> <li>Equate numbers, word name, standard form and expanded form.</li> </ul> <p>e.g. <b>word name:</b> sixth tenth = <math>\frac{4}{10}</math></p>  <p><b>Standard form:</b> 0.75 = seventy-five hundredth</p> <p><b>expanded form:</b> <math>3 + 0.7 + 0.06 + 0.002 = 3.762</math></p> <ul style="list-style-type: none"> <li>Equate one dollar to percent.</li> </ul>	<ul style="list-style-type: none"> <li>Working in pairs, have students draw pictures to illustrate fractions or decimals. Have them exchange their drawings and write the fractions and decimals.</li> <li>Use graph paper to show fractions and decimals.</li> </ul>	<ul style="list-style-type: none"> <li>edhelper.com</li> </ul>	<ul style="list-style-type: none"> <li>Have students write fractions and decimals from pictorial representations.</li> </ul>
9. Identify, write and illustrate mixed numbers.	<ul style="list-style-type: none"> <li>A mixed number is made up of a whole number and a fraction e.g. <math>1\frac{2}{4}</math></li> </ul> <p>a. 1 is the whole number and <math>\frac{2}{4}</math> is the fraction.</p>	<ul style="list-style-type: none"> <li>Use models to show mixed numbers</li> <li>Fraction models</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Teacher's Edition Vol. 2</li> </ul>	<ul style="list-style-type: none"> <li>Illustrate and explain a mixed number.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT		
<p>9. Read and write decimals through thousandths.</p>	<ul style="list-style-type: none"> <li>A decimal is a number with one or more digits to the right of the decimal point. A decimal uses place value to show values of numbers less than 1 such as tenths, hundredth and thousandths.</li> </ul> <div style="text-align: center;">  </div> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">           Fraction Write: 4/10         </td> <td style="width: 50%; text-align: center;">           Decimal Write: 0.4         </td> </tr> </table> <ul style="list-style-type: none"> <li><b>READ:</b> four tenths      <b>READ:</b> four tenths</li> <li>The fraction 4/10 and 0.4 name the same amount.</li> </ul>	Fraction Write: 4/10	Decimal Write: 0.4	<ul style="list-style-type: none"> <li>Have students use money to model decimals.           <ul style="list-style-type: none"> <li>a. One dollar    b. one dime    c. one penny</li> <li>100 cents      10 cents      1 cent</li> </ul> </li> <li><b>Decimal Concentration</b> <ul style="list-style-type: none"> <li>a. Have students match decimals with their pictorial representations.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Teacher's Edition Vol. 2</li> </ul>	<ul style="list-style-type: none"> <li>Quiz</li> </ul>
Fraction Write: 4/10	Decimal Write: 0.4					

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 4**


**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>10. Compare and order decimal through thousandths.</p>	<ul style="list-style-type: none"> <li>Use place value. Start at the left. Look for the first place where the digits are different. <b>Example:</b> 0.472 ; 0.679 9 thousandths &gt; 2 thousandths 0.6790 &gt; 0.472</li> </ul>	<ul style="list-style-type: none"> <li>Use place value to solve word problems  A penny made in 1982 weighs about 0.129 ounce. A penny made in 2006 weighs about 0.120 ounce. Which penny weighs more, a 1982 or 2006 penny?  a. Use place value to solve problem. 0.129 ; 0.120 - Start at the left. Look for the first place where the digits are different. 9 thousandths &gt; 0 thousandths 0.129 &gt; 0.120  Therefore, a penny made in 1982 weighs more than a penny in 2006.</li> <li>Students can also use the hundred grid.</li> </ul>	<ul style="list-style-type: none"> <li>Envision Math Bk. 4 p. 271</li> </ul>	<ul style="list-style-type: none"> <li>Order and compare fractions and decimals from greatest to least and vice-versa.  <b>Example:</b> Order <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math> and <math>\frac{3}{4}</math> from greatest to least.</li> </ul>



**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT						
12. Use words, pictures or concrete materials to represent a decimal as part of a whole.	<ul style="list-style-type: none"> <li>A whole can be divided into 100 equal parts called hundredths.</li> <li>Six parts out of the 100 equal parts is <math>\frac{6}{100}</math> (6 hundredth) as a fraction and 0.06 as a decimal.</li> </ul>	<ul style="list-style-type: none"> <li>Use decimal models to show part of a whole E.g. <math>\frac{2}{10}</math> or 0.20  </li> <li>Below your decimal model, write the fraction and decimal amount you have shown <math>\frac{2}{10}</math> or 0.2</li> <li>Use place value chart to show fraction and decimals E.g. <math>\frac{7}{10}</math> or seven tenths or 0.7  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 2px;">ones</td> <td style="padding: 2px;">.</td> <td style="padding: 2px;">tenths</td> </tr> <tr> <td style="padding: 2px;">0</td> <td style="padding: 2px;">.</td> <td style="padding: 2px;">7</td> </tr> </table> </li> </ul>	ones	.	tenths	0	.	7	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3</li> </ul>	<ul style="list-style-type: none"> <li>Use graph paper to draw decimal models.</li> <li>Write fractions as a decimals E.g. <math>\frac{19}{100}</math>      0.19</li> <li>Write decimals as a fraction  0.04      <math>\frac{4}{100}</math></li> </ul>
ones	.	tenths								
0	.	7								
13. Read and write Roman Numerals to M (1 000)-Continued.	<ul style="list-style-type: none"> <li>The ancient Romans used seven letters to name numbers. Roman numerals are still used today. You may see them on clocks and buildings.</li> <li>Place value is not used with Roman Numerals.</li> </ul>	<ul style="list-style-type: none"> <li><b>Roman Numerals Game</b> Students can work in pairs. Each student can write an Arabic numeral on a sheet of paper and then his/her partner can write the corresponding Roman numeral. The students can take turns writing numbers. This can also be done in reverse, with the student writing the Roman numeral first and the partner writing the Arabic numeral.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Teacher's Edition Volume 1</li> </ul>	<ul style="list-style-type: none"> <li><b>Discussion:</b> What do you notice that is different about Roman Numerals?</li> <li>Explain how to find the value of Roman Numerals.</li> </ul>						

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																													
14. Read and write Roman Numerals to M.	<ul style="list-style-type: none"> <li>The values of the letter are added or subtracted to find the total. <table style="margin-left: 40px; border: none;"> <tr> <td>I - 1</td> <td>L - 50</td> </tr> <tr> <td>V - 5</td> <td>C - 100</td> </tr> <tr> <td>X - 10</td> <td>D - 500</td> </tr> <tr> <td></td> <td>M - 1000</td> </tr> </table> </li> <li>When a letter is repeated, add the value of each letter. E.g. XXX  <math>X + X + X = 30</math></li> <li>When a letter with a greater value is placed before a smaller one, you add. E.g.  <math>XVI \rightarrow 10 + 5 + 1 = 16</math></li> <li>If a smaller value is placed before a larger one, you subtract. E.g. XL <math>\rightarrow 50 - 10 = 40</math></li> </ul>	I - 1	L - 50	V - 5	C - 100	X - 10	D - 500		M - 1000	<ul style="list-style-type: none"> <li><b>Flip and Match</b> <ul style="list-style-type: none"> <li>Class is divided into groups.</li> <li>Each group has flash cards comprised of Roman Numerals and its corresponding numbers which are turned faced down.</li> <li>Students match the Roman Numerals to its numeric value.</li> <li>The group that finishes first is the winner.</li> <li>Groups report on its most simple or difficult task experience with the game.</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>Write the value of each Roman numeral. <table style="margin-left: 40px; border: none;"> <tr> <td>E.g. VIII</td> <td>=</td> <td>8</td> </tr> <tr> <td>CX</td> <td>=</td> <td>110</td> </tr> <tr> <td>IX</td> <td>=</td> <td>9</td> </tr> <tr> <td>MMM</td> <td>=</td> <td>3 000</td> </tr> <tr> <td>CD</td> <td>=</td> <td>400</td> </tr> <tr> <td>DCLXV</td> <td>=</td> <td>655</td> </tr> <tr> <td>XLV</td> <td>=</td> <td>45 etc</td> </tr> </table> </li> </ul>	E.g. VIII	=	8	CX	=	110	IX	=	9	MMM	=	3 000	CD	=	400	DCLXV	=	655	XLV	=	45 etc
I - 1	L - 50																																
V - 5	C - 100																																
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**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 4**

**Sub-Goal 1:** Demonstrate and apply knowledge of numbers, including multiple ways of representing numbers, relationships among numbers, and number systems.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
15. Use and interpret the language of mathematics in problem solving.	<ul style="list-style-type: none"> <li>• Understand what the problem is asking.</li> <li>• Figure out what information you know and what you need to know to solve the problem.</li> <li>• Key words in word problems indicate which operation/s are involved.</li> <li>• Some key words for addition are <i>increase by, more than, total of, sum, in all, and altogether.</i></li> <li>• Some key words for subtraction are <i>less than, difference of, how many are left, how many more and how many less.</i></li> <li>• Some key words for multiplication are <i>times</i> and <i>every.</i></li> <li>• Some key words for division are <i>each, share, quotient, and average.</i></li> </ul>	<ul style="list-style-type: none"> <li>• In groups, have students solve problems.</li> </ul>	<ul style="list-style-type: none"> <li>• rhlschool.com</li> <li>• Harcourt Math Bk. 3</li> <li>• IXL.com</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Journal Writing:</b> Write how to solve a problem giving reasons for selecting the problem solving strategy and the operation to solve the problem.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRANDS: PATTERNS, FUNCTIONS, AND ALGEBRA**  
**GRADE 4**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationship in data, solve problems, and predict results.

**Essential Questions**

1. What can patterns reveal? How do the many types of patterns help us solve problems?
2. What predictions can the patterns or relationships support?
3. How can graphic representations of data help us solve problems?
4. How can prediction help you solve division problems?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRANDS: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 4**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationship in data, solve problems, and predict results.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>												
1. Identify, create, complete, and generalize pictorial and numeric patterns.	<ul style="list-style-type: none"> <li>An ordered set of numbers or objects is called a pattern. The order helps you to predict what will come next in the pattern.</li> <li>Use addition, subtraction, division, and multiplication to find patterns. E.g.</li> </ul> <table border="1"> <tbody> <tr> <td>Number of Spiders</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>?</td> </tr> <tr> <td>Number of legs</td> <td>8</td> <td>?</td> <td>24</td> <td>32</td> <td>56</td> </tr> </tbody> </table>	Number of Spiders	1	2	3	4	?	Number of legs	8	?	24	32	56	<ul style="list-style-type: none"> <li>Design and draw their own pattern and describe it to the class. Tell how the numbers or objects are related, to form a pattern.</li> <li>Make and write rules for their patterns.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3, pgs. 2, 136, Teacher's Edition Volume 2</li> <li>enVision Math Bk. 3 p. 210</li> </ul>	<ul style="list-style-type: none"> <li>Look at given patterns and explain how to find a rule. Then write a rule for each pattern.</li> <li>Complete pictorial and numeric patterns.</li> </ul>
Number of Spiders	1	2	3	4	?											
Number of legs	8	?	24	32	56											

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRANDS: PATTERNS, FUNCTIONS, AND ALGEBRA**  
**GRADE 4**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationship in data, solve problems, and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>2. Investigate the pattern of remainders in division by 2, 3, and 4 (Continued).</p>	<ul style="list-style-type: none"> <li>• A rule can be used to describe a pattern.</li> <li>• When you <b>divide</b> one number by another, and have left over, that amount is called the remainder. You will get remainders when you are dividing <b>whole numbers</b> and you are not using <b>decimal</b> values.</li> </ul> <p><b>Examples:</b>  <math>5 \div 2 = 2</math> with remainder 1  <math>7 \div 2 = 3</math> with remainder 1  <math>5 \div 3 = 1</math> with remainder 2  <math>5 \div 4 = 1</math> with remainder 1 (4 + 1)  <math>6 \div 4 = 1</math> with remainder 2 (4 + 2)  <math>7 \div 4 = 1</math> with remainder 3 (4 + 3)  <math>9 \div 4 = 2</math> with remainder 1 (4 + 4 + 1)  <math>6 \div 4 = 1</math> with remainder 2 (5 + 1)  <math>7 \div 4 = 1</math> with remainder 3 (5 + 2)  <math>8 \div 4 = 1</math> with remainder 4 (5 + 3)  <math>9 \div 4 = 2</math> with remainder 1 (5 + 4)</p>	<ul style="list-style-type: none"> <li>• <b>Divide the Line:</b> <ol style="list-style-type: none"> <li>a. Line up students (30-Numbers will vary depending of class size).</li> <li>b. Teacher asks, “If you put 30 students into one group, how many groups will you have?” (1 group)</li> <li>c. Teacher instructs students to form 2 groups and asks, “If you place 30 students into two groups, how many students will be in each group?” (15 students)</li> <li>d. This continues until as many groups as possible can be formed.</li> <li>e. Students will eventually predict the amount of groups, totals, and remainder (patterns).</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.numbernut.com">http://www.numbernut.com</a></li> <li>• Harcourt Math Book 3, pg. 536, Teacher’s Edition Volume 1</li> </ul>	<ul style="list-style-type: none"> <li>• Quiz           <ol style="list-style-type: none"> <li>a. Example: Divide \$1.13 among 3 people. Will each person get 35¢? Show your working.</li> <li>b. Write the missing numbers                E.g. 235, 241, 247, ____,                _____, _____</li> </ol> </li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRANDS: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 4**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems, and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Investigate the pattern of remainders in division by 2, 3, and 4.	Do you see any <b>patterns</b> ? <ul style="list-style-type: none"> <li>• Remainders can never be larger than the number you are dividing by.</li> </ul>			
3. Solve non-routine problems where finding a pattern is an appropriate strategy.	<ul style="list-style-type: none"> <li>• Non-routine problems involve the processes of exploring, speculating, and confirming.</li> </ul>	<ul style="list-style-type: none"> <li>• Read and then, talk about ways to solve problems, similar to the ones below.               <ol style="list-style-type: none"> <li>a. Dan is six years older than Darla. Dan is 25 years old write an equation to find Darla's age. Talk about what you did.</li> <li>b. Blanca spent \$24 on plants. Each plant cost \$3. Which equation could be used to find the number of plants that she bought?                      <math>\square - 3 = 24</math>    <math>24 \div 3 = \square</math>  <math>24 - 3 = \square</math>    <math>\square + 3 = 24</math> </li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3, pg. 136 &amp; 137</li> </ul>	<ul style="list-style-type: none"> <li>• Quiz: Students solve non-routine problems.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRANDS: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 4**

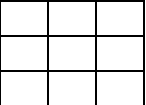
**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems, and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>4. Skip count to 100 by 6s, 7s and 8s.</p>	<ul style="list-style-type: none"> <li>Skip counting can be used to make a number pattern and find missing numbers in a given pattern.</li> <li>a. <b>Example:</b> Skip count by 6s for this pattern 36, 42, __, 54, __</li> </ul>	<ul style="list-style-type: none"> <li>Skip count by 6s 7s and 8s to 100 to complete given patterns. E.g. 18, 26, 34, __, __, __.</li> <li>Have students make number patterns using a calculator.</li> </ul> <p><b>Example:</b>            26 add 7      26, 33 40, 47            502 subtract 9      502, 403, 484            14 add 23      14, 37, 60            999 subtract 135      999, 864, 729, 594</p>	<ul style="list-style-type: none"> <li>enVisionMath Bk. 3 pg. 15</li> <li>Harcourt Math Bk. 3. pg. 2</li> </ul>	<ul style="list-style-type: none"> <li>Explain how to find a rule of given patterns, then write rule for each pattern.</li> </ul>
<p>5. Explain the difference between odd and even numbers in terms of one- to one correspondence.</p>	<ul style="list-style-type: none"> <li>Numbers can be arranged in dot patterns. Even numbers have pairs of dots  <b>E.g.</b> ●-----●                      ●-----●                      ●-----●                      ●-----●</li> <li>Odd numbers have pairs of dots with one dot left over.  <b>E.g.</b>                  ●-----●                  ●-----●                  ●</li> <li>When one is added to an even number, that number now becomes odd.</li> </ul>	<ul style="list-style-type: none"> <li>In cooperative groups, have students' complete odd and even patterns.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3, pg. 3</li> </ul>	<ul style="list-style-type: none"> <li>Use the hundred-chart to show odd and even numbers.</li> </ul> <p><b>Example:</b> Start at 2 and skip count by twos. Move 12 skips. What number you land on. Is it odd or even?</p>



**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRANDS: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 4**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems, and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT				
<p>6. Identify and create square numbers.</p>	<ul style="list-style-type: none"> <li>A <b>square number</b> forms a square. Example: <math>9 = 3 \times 3</math></li> </ul> <div style="text-align: center;">  <p><math>3 \times 3</math></p> </div> <ul style="list-style-type: none"> <li>The <b>square</b> of a number is that number multiplied by itself.</li> <li>To <b>square</b> a quantity is to multiply it by itself.</li> <li>All square numbers end in 0, 1, 4, 5, 6 or 9.</li> <li>The first ten square numbers are - <u>1</u>, <u>4</u>, <u>9</u>, <u>16</u>, <u>25</u>, 36, 49, 64, 81, 100 ...</li> </ul>	<ul style="list-style-type: none"> <li>Students find all the squared numbers in the multiplication tables.</li> <li><b>Using Geoboards</b> <ol style="list-style-type: none"> <li>Place students in heterogeneous cooperative groups.</li> <li>Assign a number for students to create squares.</li> <li>Have students create squares using geoboards.</li> <li>Have students discuss and report how squared numbers were used.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 pgs. 159 &amp; 177</li> <li>Math Glossary: <a href="http://www.richardphillips.org.uk/number/gl/square.htm">www.richardphillips.org.uk/number/gl/square.htm</a></li> <li>Geoboards</li> </ul>	<ul style="list-style-type: none"> <li>Students create squared numbers and write in journals how they arrived at their answers.</li> <li>Draw arrays to show squared numbers for the following:           <table style="margin-left: 20px;"> <tr> <td>a. 5</td> <td>b. 6</td> </tr> <tr> <td>c. 2</td> <td>d. 8</td> </tr> </table> </li> </ul>	a. 5	b. 6	c. 2	d. 8
a. 5	b. 6							
c. 2	d. 8							

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 4**

**Sub-Goal 3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

**Essential Questions**

1. How can we decide when to use an exact answer and when to use estimation?
2. How are the four basic operations related to one another?
3. How can making equivalent fractions be used to add and subtract fractions?
4. What is the need for a multi-step problem?
5. How do you know when to multiply or divide in a problem solving situation?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 4**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
<p>1. Round whole numbers to the nearest thousand, ten thousand and hundred thousand (Continued).</p>	<ul style="list-style-type: none"> <li>• Rounding is a method used to replace a number with another number that tells about how many or how much.</li> <li>• <b>Rounding Rules</b> <ul style="list-style-type: none"> <li>- Find the place to which you want to round.</li> <li>- Look at the digit to its right. If the digit is less than 5, the digit in the rounding place stays the same. If the digit is 5 or more, the digit in the rounding place increases by 1.</li> </ul> </li> <li>-<b>Note: All digits to the RIGHT of the rounding place become zeros. All digits to the LEFT of the rounding place remain the same.</b></li> <li>• <b>Examples:</b> <ul style="list-style-type: none"> <li>- <b>Round 374 to the nearest ten.</b></li> <li>* Find the rounding place, Tens</li> <li>* Ask: a. What digit do I look at? The digit in the ones place -4.</li> <li>b. Is it less or more than 5? It is less than 5.</li> <li>c. What happens to the digit in the ones place? It remains the same-7.</li> <li>d. What happens to the digit to the left of the tens place? It remains the same-3.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Rounding Riddle</b> I am now the number 360 000. I was rounded to the nearest ten thousand. I was the number between 352 678 and 352 680. What number was my original name? <ul style="list-style-type: none"> <li>- The same principle applies for rounding to the nearest ten thousand and hundred thousand.</li> </ul> </li> <li>• <b>Rounding Concentration</b> Have two sets of cards: One set with the original numbers and the other set with the matching rounded numbers. <ul style="list-style-type: none"> <li>- Guide students to match pairs of cards and explain choice of selection.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3 Teacher’s Edition Volume 1, pgs. 30 &amp; 31</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion: Explain steps to complete rounding a number to the nearest thousand?</li> <li>• Write in math journal. Draw a number line to show how you would round 543 267 to the nearest thousand.</li> <li>• <b>Quiz</b> Round numbers to the nearest thousand, ten thousand and hundred thousand.</li> </ul>

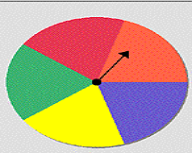
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 4**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Round whole numbers to the nearest thousand, ten thousand and hundred thousand.</p>	<p>e. What happens to the digit to the right of the tens place? It becomes a zero. <b>Therefore, 374 rounded to the nearest ten is 370.</b></p> <p><b>Round 374 to the nearest hundred</b></p> <ul style="list-style-type: none"> <li>• Find the rounding place: hundreds. <b>Ask:</b> <ul style="list-style-type: none"> <li>- What digit do I look at? The digit in the tens place: 7</li> <li>- Is it (7) less or more than 5? It is more than 5</li> <li>- What happens to the digit in the hundreds place? It increases by 1 (3 + 1).</li> <li>- What happens to the digits to the right of the hundreds place? They become zeros.</li> </ul> </li> <li>• <b>Therefore, 374 rounded to the nearest hundred is 400.</b></li> </ul> <p>- Round 2641 to the nearest thousand. To round to the nearest thousand, follow the rounding rules. <b>Therefore, 2 641 rounded to the nearest thousand is 3 000.</b></p>			

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; additions, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>2. Round decimals to the nearest whole, tenth, and hundredth.</p>	<ul style="list-style-type: none"> <li>• Steps involved in rounding decimals.               <ol style="list-style-type: none"> <li>a. Find the rounding place. Look at the digit to the right of the rounding place.</li> <li>b. If the digit is 5 or greater, add 1 to the rounding digit. If the digit is less than 5, leave the rounding digit as it is.</li> <li>c. Make the digits to the right of the rounding digit zeros.</li> </ol> </li> </ul> <p><b>Examples</b></p> <ul style="list-style-type: none"> <li>-Round \$7.42 to the nearest dollar. It is closer to \$7.00 than \$8.00.</li> <li>-Round 15.54 to the nearest tenth. Ans. 15.50</li> <li>-Round 8.639 to the nearest hundredth. Ans. 8.640.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Wheel of Decimals</b> <ul style="list-style-type: none"> <li>- Design a sectioned wheel with a spinner and decimal numbers.</li> </ul> </li> </ul>  <ul style="list-style-type: none"> <li>- Guide student to spin the spinner and round the number that the spinner lands on to the nearest whole number, tenth, or hundredth.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Food Store Shopping</b> <ol style="list-style-type: none"> <li>a. Create a food store setting with priced items.</li> <li>b. Have students go on a shopping spree where they estimate the cost of specific items to the nearest whole, tenth, or hundredth.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs. 428 &amp; 429 Teacher's Edition Volume 1</li> </ul>	<ul style="list-style-type: none"> <li>• Quiz: Round decimals to the nearest whole, tenth, and hundredth.</li> <li>• Discussion: Steps to take when rounding decimal numbers.</li> </ul>
<p>3. Recall multiplication and division facts working toward a goal of 3 seconds or less per fact (Continued).</p>	<ul style="list-style-type: none"> <li>• Multiplying is a way to find out how many in all, when groups have the same number of items.</li> <li>• Numbers that are multiplied to find a product are called <b>factors</b>.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students create multiplication raps.</li> <li>• <b>Multiplication Tag</b> <ol style="list-style-type: none"> <li>a. Create a set of multiplication fact cards.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.3 Teacher's Edition Volume 1, pgs. 518 &amp; 519.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how the dividend and the product are alike. (Each tells the total number).</li> <li>• <b>Quiz</b> Write the missing factor/s</li> </ul>

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**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations: addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>3. Recall multiplication and division facts working toward a goal of 3 seconds or less per fact .</p>	<ul style="list-style-type: none"> <li>The answer in a multiplication problem is called the <b>product</b>.</li> </ul> <p style="text-align: center;">E.g. <math>8 \times 9 = 72</math></p> <p style="text-align: center;"> <math>\begin{array}{ccccccc} &amp; &amp; \uparrow &amp; &amp; \uparrow &amp; &amp; \uparrow \\ &amp; &amp; \text{Factor} &amp; &amp; \text{Factor} &amp; &amp; \text{Product} \end{array}</math> </p> <ul style="list-style-type: none"> <li><b>Dividend</b> is a number that is divided by another number.</li> <li><b>Divisor</b> is the number that divides the dividend.</li> <li><b>Quotient</b> is the answer in a division problem.</li> </ul> <p style="text-align: center;">E.g.: <math>36 \div 4 = 9</math></p> <p style="text-align: center;"> <math>\begin{array}{ccccccc} &amp; &amp; \uparrow &amp; &amp; \uparrow &amp; &amp; \uparrow \\ &amp; &amp; \text{dividend} &amp; &amp; \text{divisor} &amp; &amp; \text{quotient} \end{array}</math> </p>	<p>b. Divide students into “n” teams and stand one behind the other. Teams must provide products for set of facts within “n” minutes.</p> <p>c. Place fact cards on a pile face down. The first person on the line will remove a card and tell the product. If the answer is correct, the person places the card in an area for the Used Cards. The player then runs and tags the person at the back of the line. The tagged person runs to the front of the line and begins this round by removing the card from the top of the <b>Unused pile</b>. The tagged person tells the product for the multiplication fact.</p> <p><b>NB: If a student provides an incorrect product, he/she must place the card face up on the Unused Pile. He/she then runs and tags the student at the back of the line.</b></p>		<ul style="list-style-type: none"> <li>Complete each number sentence. Draw an array to help.</li> </ul> <p>a. <math>\square \times 5 = 20</math></p> <p>b. <math>8 \times \square = 24</math></p> <p>c. <math>2 \times \square = 14</math></p> <p>d. <math>14 \div 2 = \square</math></p>

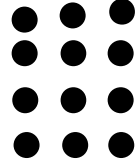
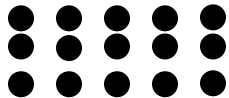
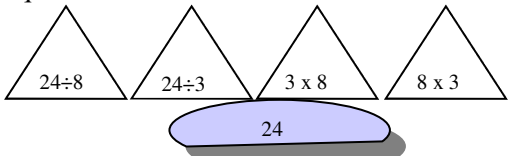
**SCOPE OF WORK  
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**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
4. Create and solve multiplication story problems.	<p><b>Steps in Problem Solving</b></p> <ul style="list-style-type: none"> <li>• Read the problem carefully</li> <li>• Underline clue words e.g. product, total, area, times</li> <li>• Ask yourself if you've seen a problem similar to this one. If so, what is similar about it?</li> <li>• What do you need to do?</li> <li>• What facts are you given?</li> <li>• What do you need to find out?</li> <li>• Define and try your strategy.</li> <li>• Solve Problems</li> <li>• Reflect: Does it seem probable?</li> </ul>	<ul style="list-style-type: none"> <li>• Draw arrays on grid paper to model problem.</li> <li>• Students will work in small groups to create story problems. Students will show a solution to the problem using manipulatives and pictures. Students will make a final copy so it will be published in a class book.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.rism.ac.th">http://www.rism.ac.th</a></li> <li>• <a href="http://www.homepages.cambrianc.on.ca/.../mathscience/science/">http://www.homepages.cambrianc.on.ca/.../mathscience/science/</a></li> </ul>	<ul style="list-style-type: none"> <li>• Create and solve story problems</li> </ul>

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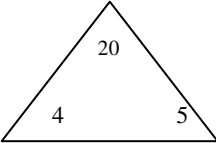
**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>5. Explain division as the inverse of multiplication (Continued).</p>	<ul style="list-style-type: none"> <li>There is an inverse relationship between division and multiplication just like there was between addition and subtraction. e.g The equation <math>45 \div 5 = 9</math> has the inverse relationships: <math>5 \times 9 = 45</math> <math>9 \times 5 = 45</math></li> <li>Similar relationships exist for multiplication. The equation <math>3 \times 7 = 21</math> has the inverse relationships <math>21 \div 3 = 7</math> <math>21 \div 7 = 3</math></li> <li>Multiplication and division are opposite or inverse operations.</li> </ul>	<ul style="list-style-type: none"> <li>Draw pictures to show that division is the inverse of multiplication.           <div style="text-align: center;">  <p><math>4 \times 3 = 12</math> <math>12 \div 4 = 3</math></p> </div> </li> <li>Given a specific number of counters, have students arrange them in an array and write the corresponding multiplication and division equations.           <p><b>Example</b></p> <div style="text-align: center;">  <p><math>3 \times 5 = 15</math> <math>15 \div 3 = 5</math> or <math>15 \div 5 = 3</math></p> </div> </li> <li><b>Junkanoo Mathematics</b> Given Junkanoo hat templates with a number written in the centre, have students write the multiplication and division equations for the number.           <div style="text-align: center;">  </div> </li> </ul>	<ul style="list-style-type: none"> <li><a href="http://www.mathdrill.com">http://www.mathdrill.com</a></li> <li>Harcourt Math Bk. 3 Teacher's Edition Volume 1, pgs. 184 &amp; 185</li> </ul>	<ul style="list-style-type: none"> <li>Complete each number sentence. Draw an array to help.           <p>a. <math>2 \times \square = 14</math></p> <p>b. <math>14 \div 2 = \square</math></p> </li> </ul>



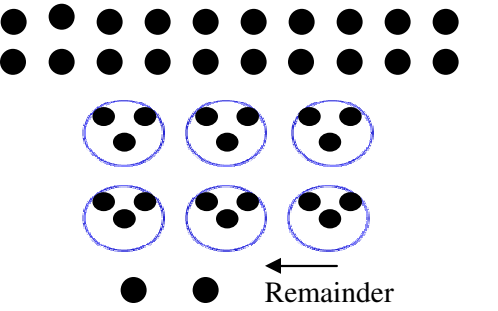
**SCOPE OF WORK**  
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**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
5. Explain division as the inverse of multiplication.		<ul style="list-style-type: none"> <li>Use triangle fact cards to write fact families. e.g. ( triangle with 4, 5 and 20 in each corner)</li> </ul> <div style="text-align: center;">  <p> <math>4 \times 5 = 20</math>  <math>5 \times 4 = 20</math>  <math>20 \div 5 = 4</math>  <math>20 \div 4 = 5</math> </p> </div>		

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**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>6. Explain what a remainder means in a division problem (Continued).</p>	<ul style="list-style-type: none"> <li>To divide means to share a number of items to find how many equal groups can be made or how many items will be in each group. Sometimes you cannot divide numbers or numbers of object evenly.</li> <li><b>REMAINDER</b> is the amount that is left over when a number cannot be divided evenly.</li> </ul> $\begin{array}{r} 6 \text{ r } 1 \\ 6 \overline{) 37} \\ \underline{- 36} \\ 1 \end{array}$ <ul style="list-style-type: none"> <li>Divide 37 by 6</li> <li>Multiply 6 by 6</li> <li>Subtract 36 from 37</li> <li>Compare 1&lt;6</li> </ul> <p><b>The quotient is 6 and the remainder is 1</b></p> <p><b>NB: The difference must be less than the divisor.</b></p> <ul style="list-style-type: none"> <li>Interpreting the remainder is a necessary skill in solving division word problems.</li> </ul>	<ul style="list-style-type: none"> <li>Use counters to show remainders. E.g. use 20 counters. Draw 6 circles</li> </ul>  <ul style="list-style-type: none"> <li><b>Dividing History: Variation of Jeopardy</b> <ol style="list-style-type: none"> <li>Teacher divides the class into teams and has students complete division questions with remainders.</li> </ol> <p><b>Categories:</b> The Lucayans, Columbus Landing, The Loyalists</p> <p><b>Sample Question:</b> Twenty-seven Lucayans needed to paint their faces. There were 4 bowls of paint. One bowl of paint can decorate 6 faces. How many Lucayans were able to have their faces painted? Explain.</p> </li> </ul>	<ul style="list-style-type: none"> <li>Primary Social Studies Bk. 4</li> <li>Tourism Education for The Bahamas</li> <li>Harcourt Math Bk. 3, pgs. 502 &amp; 503</li> </ul>	<ul style="list-style-type: none"> <li>Write missing numbers on the fact card for division problems.</li> <li>Discuss: when do you have a remainder in a division problem?</li> <li>Record and solve division problems that have remainders.</li> </ul>

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**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
6 Explain what a remainder means in a division problem.	<p>Sometimes the answer is the remainder, sometimes the remainder is dropped, and sometimes the quotient is increased.</p> <p>For example: thirty-five oranges are placed in crates.  A crate can hold 8 oranges. Every crate is filled except one.</p> <ol style="list-style-type: none"> <li>How many full crates are there? 4</li> <li>How many oranges are in the unfilled crate? 3</li> <li>How many crates are needed for all 35 oranges? 5</li> </ol> $\begin{array}{r} 4 \\ 8 \overline{) 35} \\ \underline{- 32} \\ 3 \end{array}$			
7. Divide up to a 3-digit dividend by 1-digit divisor with and without remainders (Continued).	<ul style="list-style-type: none"> <li>Steps for division</li> </ul> <p><b>Example:</b> Divide 178 by 3</p> $\begin{array}{r} 59 \\ 3 \overline{) 178} \\ \underline{- 15} \phantom{0} \\ 28 \\ \underline{- 27} \\ 1 \end{array}$ <p>-Divide 17 by 3. Place the answer in the tens place.</p>	<ul style="list-style-type: none"> <li>Create a rap, poem, or song about dividing with remainders.</li> <li>Game: Division Wheel <ol style="list-style-type: none"> <li>Class is divided into groups.</li> <li>Students spin a wheel with division problems and solve them.</li> <li>The group with the most correct answers wins the game.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Primary Social Studies Bk. 4</li> <li>Tourism Education for The Bahamas</li> <li>Harcourt Math Bk. 3 pgs. 540 &amp; 541</li> <li><a href="http://www.321know.com/div41_x3.htm">www.321know.com/div41_x3.htm</a></li> </ul>	<ul style="list-style-type: none"> <li><b>Discussion:</b> The Importance of Alignment in Division Problems</li> <li>Solve three-digit dividend by one digit divisor with and without remainders.</li> </ul>

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**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
7. Divide up to a 3-digit dividend by 1-digit divisor with and without remainders.	<ul style="list-style-type: none"> <li>- Multiply by 3</li> <li>-Subtract 15 from 17.</li> <li>-Bring down 8 ones. Divide the 28 ones.</li> <li>-Multiply 9 by 3</li> <li>-Subtract 27 from 28.</li> <li>-Compare <math>1 &lt; 3</math></li> <li>-The quotient is 59 and the remainder is 1</li> </ul>			
8. Find the product of 2 whole numbers when one factor has 2 digits or less and the other has 3 digits or less. (Use estimation, paper, pencil and calculator).	<ul style="list-style-type: none"> <li>• To find about how many, you can estimate. You can use rounding or front-end estimation to estimate products. E.g. <math>178 \times 13</math>.</li> <li>-Round each number.</li> </ul> $  \begin{array}{r}  178 \quad \longrightarrow 200 \\  \times 13 \quad \longrightarrow 10 \\  \hline  \text{Multiply} \\  \quad 200 \\  \quad \underline{\times 10} \\  \quad 2\,000  \end{array}  $ <ul style="list-style-type: none"> <li>• When numbers are large and the problem involves regrouping, paper, pencil, and calculator are good choices.</li> </ul>	<ul style="list-style-type: none"> <li>• In cooperative groups, students are given flash cards with the multiplier and the multiplicand to find the estimated product.</li> <li>• Students complete problems and report findings to the class.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3. pgs. 524-526.</li> <li>• Newspapers</li> </ul>	<ul style="list-style-type: none"> <li>• Students create and solve multiplication problems using priced articles from newspapers or magazines.</li> <li>• Have students write about the importance of estimating numbers.</li> </ul>

**SCOPE OF WORK  
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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																
<p>9. Add and subtract columns of numbers.</p>	<ul style="list-style-type: none"> <li>• <b>Steps for Addition</b>  <b>Example:</b>  <math display="block">\begin{array}{r} 43 \\ 56 \\ + \underline{21} \end{array}</math> <ul style="list-style-type: none"> <li>- Add the ones. Regroup if needed.</li> <li>- Add the tens. Regroup if needed.</li> </ul> </li> <li>• <b>Mental-Find the difference</b>  <math display="block">\begin{array}{r} 36 \\ - \underline{25} \end{array}</math> <p style="margin-left: 40px;">Think: <math>36 = 30 + 6</math>  <math>25 = 20 + 5</math></p> <ul style="list-style-type: none"> <li>-Subtract the tens: <math>30 - 20 = 10</math></li> <li>-Subtract the ones: <math>6 - 5 = 1</math></li> <li>-Add the differences <math>10 + 1 = 11</math></li> </ul> <p>Therefore, <math>36 - 25 = 11</math></p> </li> <li>• <b>Addition and subtraction of weeks and days</b>  <b>Example:</b>  <table style="margin-left: 20px; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Weeks</th> <th style="text-align: left;">Days</th> <th style="text-align: left;">Weeks</th> <th style="text-align: left;">Days</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>2</td> <td>12</td> <td>0</td> </tr> <tr> <td>+5</td> <td><u>6</u></td> <td>- 9</td> <td><u>3</u></td> </tr> <tr> <td>14</td> <td>1</td> <td>2</td> <td>4</td> </tr> </tbody> </table> </li> <li>• Maintain skill of addition and subtraction by using hours and minutes.</li> </ul>	Weeks	Days	Weeks	Days	8	2	12	0	+5	<u>6</u>	- 9	<u>3</u>	14	1	2	4	<ul style="list-style-type: none"> <li>• Using a shop setting, with priced items, have students use specific methods to add or subtract.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4</li> <li>• Bright Sparks Bk. 4 pgs. 42 &amp; 43</li> </ul>	<p>Create some word problems where students have to decide whether to add or subtract to solve the problem.</p>
Weeks	Days	Weeks	Days																	
8	2	12	0																	
+5	<u>6</u>	- 9	<u>3</u>																	
14	1	2	4																	

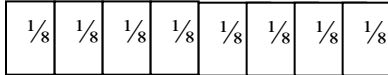
**SCOPE OF WORK**  
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**Sub-Goal -3:** Estimated and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
10. Multiply up to 2 digits by digits.	<ul style="list-style-type: none"> <li>• <b>Steps involved in multiplication</b>            Eg. Find <math>37 \times 240</math> <math display="block">\begin{array}{r} 37 \\ \times 240 \\ \hline 000 \\ 1480 \\ + 7400 \\ \hline 8880 \end{array}</math> <ul style="list-style-type: none"> <li>- Multiply by the ones. Regroup if necessary.</li> <li>- Multiply by the tens. Regroup if necessary.</li> <li>- Multiply by the hundreds.</li> <li>- Add the partial products.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Writing to explain</b>            The ferry makes 38 one way trips on Saturday and carries an average of 310 people           <ul style="list-style-type: none"> <li>- How many people were ferried on Saturday?</li> <li>- If the amount of trips were cut in half, how many people would be ferried on Saturday?</li> </ul> </li> <li>a. Students are placed into two groups and are allowed to use calculators.</li> <li>b. Group A challenges group B to complete a similar problem given above by multiplying two digit numbers by three digit numbers. The activity is timed. The group that completes the activity in the shortest time wins.</li> </ul>	<ul style="list-style-type: none"> <li>• Calculator</li> </ul>	<ul style="list-style-type: none"> <li>• Complete worksheet designed by teacher.            Example: Multiply and find the product.</li> <li><b>a.</b> <math>23 \times 120</math>    <b>b.</b> <math>97 \times 385</math></li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 4**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
11. Add and subtract fractions and mixed numbers with like denominators without regrouping.	<ul style="list-style-type: none"> <li>Fractions that have the same denominators are called like fractions.</li> <li>You can use fraction bars to add fractions and to find the sum in simplest form.</li> <li>Like fractions can be subtracted by subtracting the numerators; the denominator stays the same. Example: <math>5/6 - 1/6 = 4/6</math> -Simplify by dividing the numerator and denominator by 2 <math>\frac{4}{6} \div \frac{2}{2} = \frac{2}{3}</math></li> <li>When adding like fractions, add only the numerators. The denominator remains the same. Example: <math>\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}</math></li> <li>You can use addition and subtraction basic facts to help you add and subtract like fractions.</li> </ul>	<ul style="list-style-type: none"> <li>Use items in the classroom to show addition and subtraction of like fractions. E.g.: 5 boys and 3 girls sit on chairs in front of class. <ul style="list-style-type: none"> <li>- What fraction are boys? (<math>5/8</math>)</li> <li>- What fraction are girls? (<math>3/8</math>)</li> <li>- What fraction names the whole group? (<math>8/8 = 1</math>)</li> </ul> </li> <li>Use fraction bars to add and subtract fractions with like denominators.  E.g.: <math>7/8 - 4/8 = 3/8</math>   </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 pg. 425</li> </ul>	<ul style="list-style-type: none"> <li><b>Discussion:</b> How do you solve a fraction with like denominators? What key element do you look for?</li> <li>Explain how to use fraction bars to add and subtract fractions with like denominators.</li> <li><b>Lesson Quiz</b> Use fraction bars to find the sum. <math>1/4 + 2/4 = 3/4</math>  <math>4/10 + 4/10 = 8/10</math> or <math>4/5</math>  -Use fraction bars to find the difference <math>11/12 - 6/12 = 5/12</math></li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 4**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
<p>12. Create and solve story problems involving addition and subtraction of fractions with like denominators.</p>	<p><b>Steps in Problem Solving</b></p> <ul style="list-style-type: none"> <li>• Read the problem carefully</li> <li>• Underline clue words e.g. sum, total, difference</li> <li>• Ask yourself if you have seen a problem similar to this one. If so, what is similar about it?</li> <li>• What do you need to do?</li> <li>• What facts are you given?</li> <li>• What do you need to find out?</li> <li>• Define and try your strategy.</li> <li>• Solve Problems</li> <li>• Reflect: Does it seem probable?</li> </ul>	<p><b>Game: Fraction Columbo</b></p> <ol style="list-style-type: none"> <li>a. Students are placed into mixed ability groups where they follow a map and read clues that send them to different locations in the classroom</li> <li>b. Students are only allowed to return to their seats after they have solved the problem.</li> <li>c. The group that returns quickest with the correct answer is the winner.</li> </ol> <p><b>Questions for Game</b></p> <ol style="list-style-type: none"> <li>d. Tanya ate <math>\frac{1}{12}</math> of a pineapple and Dot ate <math>\frac{2}{12}</math>. What fraction of the pineapple did they eat?</li> <li>e. For a science report, Henry wrote <math>\frac{2}{4}</math> page more than Jason and Kayln combined. Mary wrote <math>\frac{3}{4}</math> page and Bob wrote <math>1\frac{1}{4}</math> pages. How many pages did Henry write?</li> </ol>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3 pgs. 426 &amp; 427</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Discussion:</b> How do you know what operation to use when solving a word problem?</li> <li>• Have students create and solve fractions with like denominators.</li> </ul>



**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 4**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
<p>13. Explain why like denominators are needed in the addition and subtraction of fractions.</p>	<ul style="list-style-type: none"> <li>• To add and subtract fractions with unlike denominators, change to equivalent fractions.</li> <li>• Fractions with unlike denominators cannot be added and subtracted unless you find the common denominator.</li> <li>• Without denominators, the number is not a fraction.</li> </ul> <p>Eg. <math>\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{3}{4}</math></p> <ul style="list-style-type: none"> <li>a. Change one fraction so that they both have the same denominator. One half is the same as two quarters.</li> <li>b. Add the numerators together to find the answer.</li> </ul>	<ul style="list-style-type: none"> <li>• Use fraction bars to find like fractions.</li> <li>• Solve word problems involving fractions.</li> </ul> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>a. A bumblebee is <math>\frac{4}{5}</math> inch long and a firefly is <math>\frac{1}{2}</math> inch long. What is the total length of the insects?</li> <li>b. Find the difference. The fraction of the letters in the word BAHAMAS which are As and the fraction of the letters in the word ABACO which are As.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk .4 pg. 386</li> <li>• Fraction bars</li> <li>• Caribbean Primary Mathematics Level 4</li> </ul>	<ul style="list-style-type: none"> <li>• Add and subtract fractions with like denominators.</li> <li>• Create and solve addition and subtraction fraction problems using the names of things Bahamian. Eg. Subtract the fractions. The fraction of the number of Ns that are in Benny cake and conch.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 4**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
14. Create and solve one and two step problems involving the four operations.	<ul style="list-style-type: none"> <li>• One operation is used to solve one-step problems.</li> <li>• Two or more operations are used to solve multi-step problems.</li> <li>• Review clue words for the four rules with students.</li> </ul>	<p><b>Math Baseball</b></p> <ul style="list-style-type: none"> <li>• Divide class into 2 equal teams. If there is 1 person left over, assign a job (read problems, keep score, etc)</li> <li>• Give each team a name and choose a captain.</li> <li>• Set up bases in 4 areas of the classroom. The first team forms a batting line. The second team gives a word problem. E.g. Wanda eats 2 dillies every day. How many will she eat in 9 days?</li> </ul> <p>*The first team member chooses the operation and solves the problem. If the answer is correct, the team player advances to the 1<sup>st</sup> base. As in a baseball game, players may advance once teammates answer correctly. If a member fails to answer correctly, he/she gets a strike. Three strikes means the team is OUT.</p> <p>- The second team bats and the first team ask the questions.</p>	<ul style="list-style-type: none"> <li>• Newspapers</li> <li>• Magazines</li> </ul>	<ul style="list-style-type: none"> <li>• Students create and solve multi-step problems in their mathematics journals.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

**Essential Questions**

1. How do you use measurement in your life?
2. Why is it important to estimate?
3. Why is it important to use the correct unit of measurement?
4. Why is it important to know how to convert from one unit of measure to another?
5. What is perimeter and how is it measured?
6. How is telling time on a 24- hour clock different from that of a 12- hour clock?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Estimate and measure length in kilometers, meters, decimeter centimeter and millimeter selecting the appropriate unit when necessary (Continued).</p>	<ul style="list-style-type: none"> <li>• In the metric system, millimetres (mm), centimetre (cm) ,decimetre (dm), metre (m), and kilometre are used to measure length and distance.</li> <li>• <b>Millimetres</b> and <b>centimetres</b> are used to measure very short lengths or distances.</li> <li>• A <b>millimetre</b> is about the thickness of a coin (penny).</li> <li>• A <b>centimetre</b> is about the width of your index finger.</li> <li>• <b>Metres</b> and <b>kilometres</b> are used to measure much greater length or distances.</li> <li>• A <b>metre</b> is about the distance from one hand to the other when arms are stretched out. Your armspan is about 1 metre long.</li> <li>• A <b>decimetre</b> is about the width of an adult’s hand. A <b>kilometre</b> is a little more than half a mile.</li> </ul>	<ul style="list-style-type: none"> <li>• Write four objects that you would measure using centimeter, decimeter, metre, and kilometer. Estimate the lengths and measure the objects.</li> <li>• Choose the unit that you would use to measure:               <ol style="list-style-type: none"> <li>a. your little finger</li> <li>b. a five cent coin</li> <li>c. the distance between New Providence and Eleuthera</li> <li>d. the classroom door</li> </ol> </li> <li>• Use a centimetre ruler. Estimate and measure the length of various objects (e.g. your pencil) to the nearest centimetres then record your measure.</li> <li>• Game: Smile Metric Style by Deanna Metder               <ol style="list-style-type: none"> <li>a. Materials: Metric Rulers crayons or markers pencil construction paper or graph paper.</li> </ol> </li> </ul> <p><b>PROCEDURES:</b></p> <ol style="list-style-type: none"> <li>a. Divide class into groups of four.</li> <li>b. Each student will measure and record the length of each person’s arm in his or her group.</li> </ol>	<ul style="list-style-type: none"> <li>• Harcourt Math 3 Teacher’s Edition Volume 2 pg. 373</li> <li>• <a href="http://www.mathforum.com">http://www.mathforum.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Discuss: Why would it be better to measure the length of the whiteboard in metres rather than in centimetres?</li> <li>• Journal Writing: Why it is important to have more than one unit of measure?</li> <li>• Lesson Quiz: Choose the unit you would use to measure the information below. Write cm, m, or km.               <ol style="list-style-type: none"> <li>a. The length of a jitney.</li> <li>b. The length of a eraser.</li> <li>c. The distance from cable beach to Downtown.</li> <li>d. The length of your notebook.</li> </ol> </li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objectives, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Estimate and measure length in kilometres, metres, decimetre centimetre, and millimetre selecting the appropriate unit when necessary.</p>		<p>c. Students check their results against the result of the rest of the group. If there are any discrepancies the students should verify the results as a group.</p> <p>b. When an accurate measurement has been attained for each child, the results are recorded on the board as each child records them at his/her seat.</p> <ul style="list-style-type: none"> <li>• Order all the measurements from least to greatest.</li> <li>• Graph your results.</li> <li>• Find the sum of all the arm lengths in your classroom. Do not forget the teacher's arm.</li> <li>• Create one arm length out of construction paper that is the length of the entire arm in your room.</li> </ul>		

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Explain the relationship among the metric units.	<ul style="list-style-type: none"> <li>• There are two advantages of the metric system.               <ol style="list-style-type: none"> <li>a. The metric prefix values are the same for length, weight, and liquid.</li> <li>b. All conversions involve powers of ten.</li> </ol> </li> <li>• Several examples of units               <ul style="list-style-type: none"> <li>10 centimetres = 1 decimetre (length)</li> <li>10 millilitres = 1 decilitre (capacity)</li> <li>10 hectograms = 1kilogram (weight)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Estimate and measure the length of three objects in your classroom to the nearest centimetre, decimetre, or metre. Record your measurements.</li> <li>• Students experiment with the units of measurement to discover the relationships that exist between them.</li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics for Elementary Teachers pgs. 566 &amp; 567</li> <li>• Harcourt Math Bk. 3. pg.377</li> <li>• rulers</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the relationship between millilitres to litres.</li> <li>• Write if a bottle’s capacity is 4L, how many milliliters it holds. Explain how you found the answer.</li> <li>• Teacher designs problems. Examples               <ol style="list-style-type: none"> <li>a. How many centimetres are in 2 metres?</li> <li>b. How many millimetres are in a centimetres?</li> </ol> </li> </ul>
3. Convert metric units of length, mass, and capacity (Continued)..	<ul style="list-style-type: none"> <li>• When converting units within the metric system, multiply when you change larger units to smaller units.</li> <li>• A decimetre is larger than a centimetre. Example: 600 dm = _____cm</li> </ul> <p>Length of road in decimetres (600). There are 10 cm in 1 dm. Therefore, 600 x 10= 6 000 cm.</p> <ul style="list-style-type: none"> <li>• <b>Divide</b> when you change smaller units to larger units.               <ol style="list-style-type: none"> <li>a. A millilitre is smaller than a litre.</li> </ol> </li> </ul> <p><b>Example:</b>3 000mL= _____L 3 000 mL ÷ 1 000= 3L</p>	<ul style="list-style-type: none"> <li>• <b>Basket Loss</b> <ol style="list-style-type: none"> <li>a. Students are given five shots at a basketball rim. Each successful shot is 2 000 grams of fat that they will lose on a weight loss plan.</li> <li>b. Students calculate how much weight they would lose after the attempts</li> <li>c. Students convert the numbers of successful shots to grams.</li> </ol> </li> <li>• Given the length of several islands of The Bahamas in kilometres, have students convert the distances to metres.</li> </ul>	<ul style="list-style-type: none"> <li>• Map</li> <li>• Atlas</li> <li>• Balances</li> <li>• www.homeschoolmath.net</li> </ul>	<ul style="list-style-type: none"> <li>• Journal Writing: Have students explain how to convert metric units and give illustrations of the same.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Convert metric units of length, mass, and capacity.	<ul style="list-style-type: none"> <li>• Mass is the amount of matter in an object. The metric unit of mass is the gram. The most frequently used metric units of mass is the gram (g) and kilogram (kg).</li> <li>• A kilogram is larger than a gram. Example 4 kg = _____g 1 000 g = 1 kg. Therefore, 4 kg x 1 000 = 4 000g</li> </ul>			
4. Estimate and measure using millilitre and litre.	<ul style="list-style-type: none"> <li>• Capacity is the amount a container will hold when it is filled.</li> <li>• Capacity can be measured by using metric units such as the millilitre (ml) and liter (L)</li> <li>• A dropper holds about 1ml</li> <li>• A glass holds about 250 ml</li> <li>• A water bottle holds about 1L</li> <li>• <b>Vocabulary:</b> millilitre (ml) and litre (L)</li> </ul>	<ul style="list-style-type: none"> <li>• Estimate the number of millimetres that are in a litre.</li> <li>• Pour 1 liter of water at a time into a pitcher. Repeat until the pitcher is full. Record the number of liters.</li> <li>• Estimate and measure the capacity of each of the following objects. Write the objects' capacity in order from least to greatest.               <ul style="list-style-type: none"> <li>a. a cup</li> <li>b. a bucket</li> <li>c. a bowl</li> <li>d. a lid from a jar</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.3 pg. 378 Volume 2 Teachers Edition</li> <li>• milliliter dropper</li> </ul>	<ul style="list-style-type: none"> <li>• Lesson Quiz: Choose the unit you would use to measure the capacity of each.</li> <li>Write ml or L               <ul style="list-style-type: none"> <li>a. a sink filled with water.</li> <li>b. a bottle of syrup.</li> <li>c. a mug of soup.</li> <li>d. a jug of liquid detergent <b>E.g.</b> joy</li> </ul> </li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

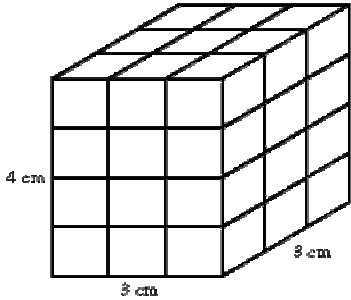
**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
<p>5. Use grams and kilograms to estimate and determine mass.</p>	<ul style="list-style-type: none"> <li>• The gram (g) and the kilogram (kg) are metric units used for measuring mass, or the amount of matter in an object.</li> <li>• Mass is how much an object weighs.               <ol style="list-style-type: none"> <li>a. A paper clip has a mass of about 1 gram.</li> <li>b. A large book has a mass of about 1 kilogram.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Find the mass of objects in your classroom.               <ol style="list-style-type: none"> <li>a. Place 10 paper clips on one side of the simple balance scale to show 10g.</li> <li>b. Find an object that you think might equal 10g. Use the balance to check.</li> <li>c. Repeat steps “a” and “b” for 25g and 1kg. Use the book to show 1kg.</li> </ol> </li> <li>• Name an object that has a mass of each amount.               <ol style="list-style-type: none"> <li>a. ‘n’ grams</li> <li>b. ‘n’ kilograms</li> </ol> </li> <li>• Students work in groups to estimate and find the mass of various objects. Findings are recorded in a table.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Book 3 pg. 380, Teacher’s Edition Volume 2</li> <li>• gram weights</li> <li>• kilogram weights</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss: Brainstorm and create a list of objects that have a mass of about 1 gram and about 1 kilogram.</li> <li>• Quiz: Choose the better estimate.               <ul style="list-style-type: none"> <li>- A watermelon: 10 g or 10 kg.</li> <li>- A table: 12g or 12 kg.</li> <li>- A pen: 7 g or 7 kg.</li> </ul> </li> </ul>



**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>6. Explain the concept of volume using words and /or pictures and/or concrete materials.</p>	<ul style="list-style-type: none"> <li>• <b>Volume</b> is the number of cubic units needed to fill a solid figure.</li> <li>• A <b>cubic unit</b> is used to measure volume.</li> <li>• A <b>cubic unit</b> is a cube with a side length of a unit. You can use connecting cubes to show cubic units</li> <li>• Example of concept of volume.</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• The box is 3 cubes long, 3 cubes wide and 4 cubes high. 9 cubes cover the bottom of the box. There are 4 layers. 36 cubes fill the box. Therefore, it has a volume of 36 cubes.</li> </ul>	<ul style="list-style-type: none"> <li>• Use boxes of various sizes to estimate and find volume. Compare estimation with the actual volume.</li> <li>• Use connecting cubes to find the volume of various objects. Record your findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics Plus Bk. 4 pgs. 306-309</li> <li>• Harcourt Math Bk. 3 pg. 399</li> <li>• Connecting cubes</li> <li>• Boxes</li> <li>• Mathematics In Motion: A Resource Book for Teachers, pg.108</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Journal Writing</b> Todd has a box that is 4 cubes long and 4 cubes wide. The box has a volume of 48 cubes - what is the height of the box? Explain 3 cubes; each layer has 16 cubes</li> </ul> <p style="text-align: center;"><math>16 + 16 + 16 = 48</math></p>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																
7. Select the appropriate unit for estimating and measuring volume.	<ul style="list-style-type: none"> <li>• Volume is expressed with the word "cubic" as the prefix of the unit being measured. Example: cubic metres</li> <li>• The volume of a solid is the amount of space it occupies.</li> <li>• Volume and capacity are related. A volume of 1 cubic centimeter (cc) can hold 1 millilitre (mL) of water.</li> <li>• The litre is the unit used to measure volume.</li> <li>• In liquids it can be litres, gallons, ounces, pints and quarts.</li> <li>• Using the metric system, mL and kl, are used.</li> <li>• The customary units are ounces, cups, pints, quarts, and gallons.</li> <li>• Volume can be found by multiplying the length, breadth/width, and height of cubes and cuboids. <math>V = L \times B \times H</math></li> </ul>	<ul style="list-style-type: none"> <li>• Students complete the table in pairs and report their findings. They estimate answers and then calculate to find the actual answers.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>L</th> <th>B</th> <th>H</th> <th>Volume</th> </tr> </thead> <tbody> <tr> <td>2 cm</td> <td>3 cm</td> <td>1 cm</td> <td>?</td> </tr> <tr> <td>4 cm</td> <td>5 cm</td> <td>?</td> <td>60 cc</td> </tr> <tr> <td>?</td> <td>9 cm</td> <td>2 cm</td> <td>72 cc</td> </tr> </tbody> </table>	L	B	H	Volume	2 cm	3 cm	1 cm	?	4 cm	5 cm	?	60 cc	?	9 cm	2 cm	72 cc	<ul style="list-style-type: none"> <li>• Mathematics Plus Bk. 4</li> <li>• Caribbean Primary Mathematics Bk. 5 pg. 97</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Lesson Quiz:</b> Complete questions to find estimated and actual answers. Students will also be asked to determine which unit to use for estimation.</li> </ul>
L	B	H	Volume																	
2 cm	3 cm	1 cm	?																	
4 cm	5 cm	?	60 cc																	
?	9 cm	2 cm	72 cc																	

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
8. Explain the volume concept of a litre by construction.	<ul style="list-style-type: none"> <li>• The standard unit of volume in the metric system is the liter.</li> <li>• One litre is equal to 1000 cubic centimeters in volume. Other units of volume and their equivalents in liters are as follows:   millilitre = 0.001 litre  1 centilitre = 0.01 litre  1 decilitre = 0.1 litre  1 kilolitre = 1000 liters</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher fills labeled containers in the class and students answer the following: <ol style="list-style-type: none"> <li>a. List the letters of the containers that hold less than a metre.</li> <li>b. List the letters of the containers that hold more than a metre.</li> <li>c. List the letters of the containers that hold a metre.</li> <li>d. List the letters of the containers in order from least to greatest.</li> </ol> </li> <li>• Students fill a box with centimetre cubes. They answer the following questions: <ol style="list-style-type: none"> <li>a. How many cubes are on one layer of the box?</li> <li>b. How many layers are there?</li> <li>c. How many cubes does the box hold?</li> <li>d. How many centimetres long is each side?</li> <li>e. The box is how many centimetres high?</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.books.google.bs/books?isbn=049509191X">http://www.books.google.bs/books?isbn=049509191X</a></li> </ul>	<ul style="list-style-type: none"> <li>• Students explain in mathematics journal the concept of volume.</li> </ul>

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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
9. Solve problems which require the addition and subtraction of metric units.	<ul style="list-style-type: none"> <li>• <b>Understand:</b> What you are asked to find? What information will you need?</li> <li>• <b>Plan:</b> What strategy can be used to solve the problem?</li> <li>• <b>Solve:</b> How can you use the strategy?</li> <li>• <b>Check:</b> What other strategy could you use?</li> <li>• Metric units follow the same format as the addition and subtraction of whole numbers.   <math display="block">\begin{array}{r} 4\text{m } 20\text{ cm} &amp; 4.20\text{ m} \\ + 5\text{m } 85\text{ cm} &amp; \underline{5.85\text{ m}} \\ \hline 10 &amp; 05 \end{array}</math> </li> <li>• Heavenn lives 3 562 km from her best friend Sherry, who lives in another country. If Heavenn visits Sherry and returns home, how many kilometers did she travel in all? Example: <math>3\ 562 \times 2 = 7\ 124\text{ km}</math></li> </ul>	<ul style="list-style-type: none"> <li>• Students are placed in groups. Each group is given a section of the Real Estate Ads in the newspaper. Each group finds the total amount of the land for sale in kilometer. They will find the difference between the sums of their total and another group's total.</li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics Plus Bk. 4.</li> <li>• Newspaper</li> <li>• <a href="http://www.edhelper.com">http://www.edhelper.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Solve addition and subtraction problems involving the metric units.</li> </ul>

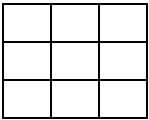
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 4**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
10. Read the thermometer in Celsius and Fahrenheit.	<ul style="list-style-type: none"> <li>• Degrees Fahrenheit (<math>^{\circ}\text{f}</math>) are customary units of temperature and degrees Celsius (<math>^{\circ}\text{c}</math>) are metric units of temperature.</li> <li>• The red substance in the thermometer is the mercury.</li> <li>• To read a thermometer, find the number at the top of the mercury. 20<math>^{\circ}</math> F Read: twenty degrees Fahrenheit 30 <math>^{\circ}\text{C}</math> Read: thirty degrees Celsius.</li> <li>• Water boils at 212<math>^{\circ}</math> F or 100<math>^{\circ}</math> C.</li> <li>• Water freezes at 32<math>^{\circ}</math> F or 0<math>^{\circ}</math> C.</li> <li>• Room temperature is 68<math>^{\circ}</math> F or 20<math>^{\circ}</math> C.</li> </ul>	<ul style="list-style-type: none"> <li>• Estimate the temperature outside the classroom in degrees Celsius and in degrees Fahrenheit. Record your answers.</li> <li>• Practice reading the thermometers on a daily basis for about a week. Record readings each day and create a bar graph.</li> <li>• Place a thermometer in a glass of cool water. Ask students to read the temperature. Change the temperature of water several times by adding ice or hot water to give students additional practice in reading thermometers. Each time you add hot water or ice students predict how the temperature will change.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3 pg. 383, Teacher's Edition</li> </ul>	<p><b>Lesson Quiz</b></p> <ul style="list-style-type: none"> <li>• Look at the thermometer. Write the temperature. See page 36a</li> <li>• A cold message. See page 36a</li> </ul> <p><b>Discuss:</b> If you see an outdoor thermometer that shows the temperature as is, is the thermometer showing degree Celsius or degrees Fahrenheit? Explain.</p>

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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>11. Estimate and calculate area of objects and shapes using appropriate units.</p>	<ul style="list-style-type: none"> <li>• A square unit is a square with a side length of 1 unit.</li> <li>• Square units measure area.</li> <li>• Area is the number of square units needed to cover a flat surface.</li> <li>• Vocabulary: Area is measured in square units.</li> <li>• To find the area of rectangles multiply the number of rows by the number of squares in each row or count the amount of squared in the diagram. Example:</li> </ul> <div style="text-align: center;"> <p>3 rows </p> <p>3 in each row</p> <p><math>3 \times 3 = 9</math> square units</p> </div>	<ul style="list-style-type: none"> <li>• Find the area of various flat surfaces in the classroom. E.g. Desktop, tabletop, book, floor, etc. using square tiles. Have students estimate and then count the tiles to tell how many.</li> <li>• Have students identify and write examples of finding areas in the real world.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 3 pg. 395</li> <li>• Mathematics Plus Bk. 4</li> <li>• graph paper</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how to find the area of a flat surface.</li> <li>• Explain how multiplication can be used to find area.</li> <li>• Find the area of outlines on graph paper. Write the area in square units.</li> </ul>

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<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
12. Calculate the area of rectangles using arrays.	<ul style="list-style-type: none"> <li>An array is an arrangement of objects in rows and columns.</li> </ul>	<ul style="list-style-type: none"> <li>Students, in groups calculate the area of rectangles using arrays. Groups report findings.</li> <li>Create songs, poems, or rap about how to find the area of rectangles using arrays.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 pg. 395</li> </ul>	<ul style="list-style-type: none"> <li>Have students write questions for given scenarios. Example: Joan’s scarf is 12 feet wide and 2 feet long. The answer is 24 square feet.</li> <li>Create a rectangle out of different materials (newspaper, boxes, etc) and calculate the area of the same. Answers will vary.</li> </ul>
13. Estimate, measure, and calculate perimeter of objects and shapes in metres and centimetres.	<ul style="list-style-type: none"> <li>The distance around a figure is called its perimeter. You can add the lengths of the sides of a figure to find the perimeter.</li> <li>Vocabulary: perimeter</li> </ul>	<ul style="list-style-type: none"> <li>Students name examples of perimeter in the real world E.g. The distance around a book, desk, chalkboard, window door, house, wall, fence, etc.</li> <li>Students find the perimeter of the chalkboard in metres and centimetres. Students record and present their results.</li> <li>Find the perimeter of the classroom in metres.</li> <li>Work in small groups to estimate and find the perimeter of different shapes.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3, pg. 390, Teacher’s Edition.</li> <li>metre rulers</li> <li>centimetre rulers</li> <li>grid papers</li> </ul>	<ul style="list-style-type: none"> <li>Students apply their understanding of perimeter to write a math problem.</li> <li>Students model the following rectangles on grid papers. <ul style="list-style-type: none"> <li>e. 32 square units</li> <li>f. 17 square units</li> <li>g. 63 square units</li> </ul> </li> </ul>

**SCOPE OF WORK  
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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
14. Estimate and measure time needed to perform a task.	<ul style="list-style-type: none"> <li>• Some tasks take a short time to perform while other tasks take a longer time to perform.</li> <li>a. 60 seconds = 1 minute</li> </ul>	<ul style="list-style-type: none"> <li>• Perform different tasks E.g. move book from shelf or take a note to the office. Tell which task will take more or less time. Then tell how long it will take to perform each task.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Book 3 pg. 94, Teacher’s Edition Volume 1</li> <li>• stop watch</li> </ul>	<ul style="list-style-type: none"> <li>• Write about 4 tasks that can be done in a minute.</li> <li>• Write about 4 tasks that can be done in a longer time.</li> </ul>
15. Use a.m. and p.m. appropriately.	<ul style="list-style-type: none"> <li>• Each day has 24 hours.</li> <li>• A.M. is the time between midnight and noon.</li> <li>• P.M. is the time between noon and midnight.</li> </ul>	<ul style="list-style-type: none"> <li>• Students write three things they do in the morning and three things they do in the afternoon.</li> <li>• Students observe the sun to tell the time of the day. For example, the sun in the east represent the morning, and in the west, the evening.</li> <li>• Create a collage of things done in the a.m. or the p.m.</li> <li>• Using a world map, show students the time zones relative to the Meridian of Greenwich. Ask students the times of major cities given the time of Greenwich.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Book 3 pg. 94, Teacher’s Edition Volume 1</li> <li>• www.harcourtschool.com</li> <li>• clock</li> </ul>	<ul style="list-style-type: none"> <li>• Students debate on their favourite time of the day (a.m. or p.m.).</li> <li>• Students write a story using the terms a.m. and p.m.</li> </ul>
16. Read and write time to the nearest minute on a twelve hour clock (Continued).	<ul style="list-style-type: none"> <li>• The hands, numbers, and marks on clocks help you tell what time it is. In one minute, the minute hand moves from one mark to the next.</li> </ul>	<ul style="list-style-type: none"> <li>• Use digital and analog clocks to show and count the minutes on the clock’s face.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Book 3 p. 94, Teacher’s Edition Volume 1</li> <li>• digital clock</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how the hands on the clock work.</li> </ul>



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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
16. Read and write time to the nearest minute on a twelve hour clock.	<ul style="list-style-type: none"> <li>• To find the number of minutes after the hour, count by fives and ones to where the minute hand is pointing.</li> <li>• Using a.m. and p. m. help you know what time of the day or night it is. A.M. is used for the hours from 12 midnight to 12 noon. P. M. is used for the hours from 12 noon to 12 midnight.</li> </ul>	<ul style="list-style-type: none"> <li>• Practice reading and writing the time in two ways. E.g. 18 minutes before 2 or 1:42</li> </ul>	<ul style="list-style-type: none"> <li>• analog clock</li> <li>• <a href="http://www.superteacherworksheets.com">www.superteacherworksheets.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Lesson Quiz: Read and write times on a clock.</li> </ul>
17. Read and write time to the twenty-four hour clock (Continued).	<ul style="list-style-type: none"> <li>• The military tells time using a 24-hour clock, beginning at midnight, which is 0000 hours. So, 1:00 a.m. is 0100 hours, 2:00 a.m. is 0200 hours, and so-on up until 11:00 p.m. which is 2300 hours.</li> <li>• A 24-hour clock is an "extension" of a 12-hour clock.</li> </ul>	<ul style="list-style-type: none"> <li>• In cooperative groups, students match time to 24-hour clock. For example: 4:00 AM -- 0400 hrs 5:00 AM -- 0500 hrs 6:00 AM -- 0600 hrs 12:00 PM -- 1200 hrs 1:00 PM -- 1300 hrs 2:00 PM -- 1400 hrs 3:00 PM -- 1500 hrs</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.usmilitary.about.com">http://www.usmilitary.about.com</a></li> <li>• <a href="http://www.ehow.com">http://www.ehow.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Write in journals how the 24 and 12 hour clocks are alike and different.</li> <li>• Create clocks showing 12 and 24 hour times</li> </ul>

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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT										
17. Read and write time to the twenty-four hour clock.	<ul style="list-style-type: none"> <li>When a 12-hour clock reaches 12:59 and resets to 1:00, the 24-hour clock keeps going to 13:00 and onward.</li> <li>The bigger the hour number is on the clock, the later it is in any given day.</li> <li>Subtract 12 from the hour of any time past 12:00 on the 24-hour clock to find its 12-hour p.m. counterpart. For example, 15:34 minus 12 hours is 3:34 p.m.</li> </ul>	<ul style="list-style-type: none"> <li>Make a game out of the two clocks set up side by side. Cover the 12-hour clock with a piece of construction paper or fabric and have students guess the time on the 12-hour clock, by only looking at the 24-hour clock beside it. When they have a good grasp of the concept, cover the 24-hour clock and have the children guess its time based on the 12-hour clock.</li> </ul>												
18. Convert hours to minutes and vice versa (Continued).	<ul style="list-style-type: none"> <li>Sixty (60) minutes equals one hour.</li> <li>To change minutes to hours, divide by 60.            Example: 240 minutes = _____ hours  <math>240 \div 60 = 4</math> hours</li> </ul>	<ul style="list-style-type: none"> <li><b>Time to Partner Up</b> <ol style="list-style-type: none"> <li>Display on the board or wall two lengths of flannel (red and blue) horizontally, one beneath the other. Each flannel is equally divided into 11 blocks and labeled hours and minutes in the initial box.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 114</li> <li>Mathematics in Motion: A Resource Book for Teachers, pg. 112</li> </ul>	<ul style="list-style-type: none"> <li>Students complete table.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="text-align: center;"><b>Hrs.</b></td> <td style="text-align: center;"><b>3</b></td> <td style="text-align: center;"><b>?</b></td> <td style="text-align: center;"><b>?</b></td> <td style="text-align: center;"><b>6</b></td> </tr> <tr> <td style="text-align: center;"><b>Min.</b></td> <td style="text-align: center;"><b>?</b></td> <td style="text-align: center;"><b>120</b></td> <td style="text-align: center;"><b>240</b></td> <td style="text-align: center;"><b>?</b></td> </tr> </tbody> </table>	<b>Hrs.</b>	<b>3</b>	<b>?</b>	<b>?</b>	<b>6</b>	<b>Min.</b>	<b>?</b>	<b>120</b>	<b>240</b>	<b>?</b>
<b>Hrs.</b>	<b>3</b>	<b>?</b>	<b>?</b>	<b>6</b>										
<b>Min.</b>	<b>?</b>	<b>120</b>	<b>240</b>	<b>?</b>										

**SCOPE OF WORK**  
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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
18. Convert hours to minutes and vice versa.	<ul style="list-style-type: none"> <li>• To change hours to minutes, multiply by 60. Example: 3 hours = _____minutes</li> <li>• <math>3 \times 60 = 180</math> minutes</li> </ul>	<p>b. Distribute Velcro-backed cards (with printed numbers) RED for hours and BLUE for minutes.</p> <p>c. Child places the card in the appropriate group. E.g. 360 minutes/BLUE. Student with corresponding hour index card comes and places it in the appropriate RED box. i.e 6 (hours/RED).</p> <p>d. The last student who places his card up calls someone else to go put his card where it belongs. The game continues until all cards are placed correctly.</p> <ul style="list-style-type: none"> <li>• <b>Time Travel</b> <ul style="list-style-type: none"> <li>a. Use a bar graph to highlight travel from a given key point to various destinations. Students convert minutes to hours.</li> </ul> </li> </ul>		

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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships and determine acceptable levels of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
19. Solve problems involving elapsed time (Continued).	<ul style="list-style-type: none"> <li>Elapsed time: the time that passes from the start of an activity to the end of an activity.</li> <li>The easiest way to find elapsed times is to add from the given time to the expected time. Example: Art class 1:30 p.m. to 2:15 p.m. a. Count from 1:30 to 2:00 = 30 minutes b. Count from 2:00 to 2:15 = 15 minutes c. For the total add 30 and 15 minutes = 45 minutes. Elapsed time is 45minutes</li> </ul>	<ul style="list-style-type: none"> <li>Students form a circle around the classroom.               <ol style="list-style-type: none"> <li>Teacher displays a flashcard with a specific time frame. E.g. 3:00 p.m.-4:00 p.m.</li> <li>A selected student randomly chooses a tag card from a bag. The card chosen tells at which intervals students will give the time. E.g. 5 <u>10</u> 15 30 minutes  <div style="text-align: center;">↑ selected time</div> </li> <li>The student calls the time. E.g. 3:00 p.m. The next person says 3:10, 3:20, 3:30, 3:40...</li> <li>The goal is to reach the end time while giving the elapsed time.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 pg..99</li> <li>www.superteacherworksheets.com</li> </ul>	<ul style="list-style-type: none"> <li>In pairs, have students create elapsed time word problems. Groups exchange word problems and solve.</li> <li>Quiz: Write the elapsed time for problems given. For example, The basketball game started at 1:30 a.m. and ended at 3:15 p.m. How long did the game last?</li> </ul>

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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
19. Solve problems involving elapsed time.		<ul style="list-style-type: none"> <li>• Use Bahamasair’s flight schedule to calculate the time it takes to fly from Nassau to:               <ol style="list-style-type: none"> <li>a. Marsh Harbour, Abaco</li> <li>b. Freeport, Grand Bahama</li> <li>c. George Town, Exuma</li> <li>d. Governor’s Harbour, Eleuthera</li> <li>e. Stella Maris, Long Island</li> </ol> </li> </ul>		
20. Solve real world problems involving the +, -, x, and ÷ of money	<ul style="list-style-type: none"> <li>• Adding and subtracting money amounts is similar to adding and subtracting whole numbers.</li> <li>• Multiplying and dividing money amounts is similar to multiplying and dividing whole numbers</li> </ul>	<ul style="list-style-type: none"> <li>• In groups, have students solve various problems and report findings.               <ol style="list-style-type: none"> <li>a. Find the total price by adding the amounts. E.g. \$ 3.95 + \$4.64 = _____</li> <li>b. Write the difference in dollars and cents. E.g.       \$ 50.00               - 28.98</li> <li>c. Find the product. \$3.95 x 4 = _____</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Book 3 Teacher’s Edition Volume 1</li> </ul>	Lessons Quiz  E.g. \$1.53 + 2.27 -----  \$ 142. 39 - 21. 51 -----  <b>Write:</b> Explain how you would solve this problem: \$4.42 + \$ 3.65 = \$8.07

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**STRAND: GEOMETRY**  
**GRADE: 4**

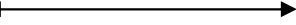
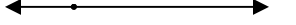

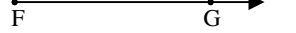
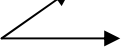


**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

**Essential Questions:**

1. How are basic geometric ideas (points, lines, angles...) found and used in everyday life?
2. How do the terms slide, flip, and turn relate to translation, reflection, and rotation.
3. How are polygons used in our world?
4. How are geometric properties used to solve problems in everyday life?

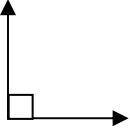
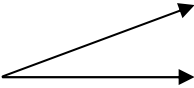
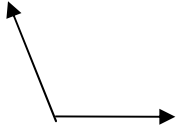
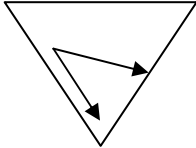
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 4**

**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Identify, name and draw (using a ruler and straight edge) points, line, line segments, rays and angles.</p>	<ul style="list-style-type: none"> <li>A <b>line</b> is a straight path in a plane. It continues in both directions. It does not end. E.g. </li> <li>A <b>point</b> is an exact position or location E.g. </li> <li>A <b>line segment</b> is straight. It is part of a line and it has two end points. E.g.  line segment <math>MN</math>, <math>\overline{MN}</math> or line segment <math>NM</math>, <math>\overline{NM}</math></li> <li>A <b>ray</b> is part of a line. It has one end point. It is straight and continues in one direction. E.g.  ray FG</li> <li>An <b>angle</b> is formed when two rays or line segments share the same end point. The common endpoint is the <b>vertex</b>. E.g. </li> </ul>	<ul style="list-style-type: none"> <li>Work in small groups to draw lines, points, line segments, rays, and angles on construction paper and grid paper.</li> <li>Make up riddles. E.g. - I am straight and do not have any end points. What am I?</li> <li>Students lie on floor and use their bodies to make angles.</li> <li>Use scissors to make/show acute and obtuse angles.</li> <li>Cut two arms from card board or construction paper and join them together. Have students rotate the arms to indicate size of angles.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Teacher's Edition Volume 2</li> <li><a href="http://www.harcourtschool.com/glossary/math">www.harcourtschool.com/glossary/math</a></li> </ul>	<p><b>Quiz</b></p> <ul style="list-style-type: none"> <li>Name each figure. E.g.</li> </ul> <div style="text-align: center;">  point A         </div> <div style="text-align: center;">  <b>Ray</b> </div> <p>Draw each figure e.g.</p> <ol style="list-style-type: none"> <li>a line</li> <li>a line segment</li> </ol>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
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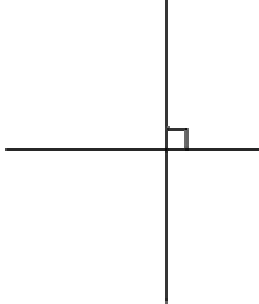
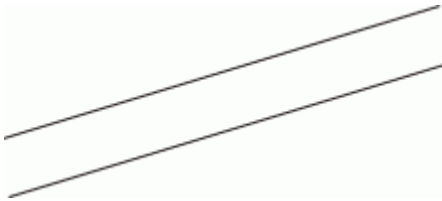
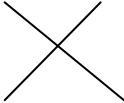
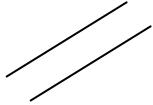
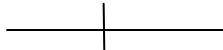
**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>2. Identify right, acute, and obtuse angles.</p>	<ul style="list-style-type: none"> <li>A <b>right angle</b> is a special angle that forms a square corner. A right angle measures <math>90^\circ</math>.</li> </ul> <p>E.g.</p>  <ul style="list-style-type: none"> <li>The measure of some angles is less than a right angle. These are <b>acute angles</b>.</li> </ul> <p>E.g.</p>  <ul style="list-style-type: none"> <li>The measure of some angles is greater than a right angle. These are <b>obtuse angles</b>.</li> </ul> <p>E.g.</p>  <p>* The unit used to measure an angle is a degree (<math>^\circ</math>)</p>	<ul style="list-style-type: none"> <li>Find angles in the classroom and identify them (right, acute, or obtuse angle).</li> <li>Use pipe cleaners to create angles.</li> <li><b>Game:</b> What is the Angle? Play the game with a partner             <ol style="list-style-type: none"> <li>One student selects a flash card and identifies the type of angle. If he/she gets it correct, he/she will get the point. If not, a point is not received.</li> <li>The game is finished when all the cards have been used. The person with the most points is the winner.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Teacher's Edition</li> <li>Flash cards</li> </ul>	<ul style="list-style-type: none"> <li>Use a corner of a sheet of paper to tell whether each angle is a right, acute or an obtuse.</li> </ul> <p>E.g.</p>  <p style="text-align: center;"><b>acute angle</b></p> <ul style="list-style-type: none"> <li>Journal writing             <ul style="list-style-type: none"> <li>How do you know whether an angle is obtuse or acute?</li> </ul> </li> </ul>




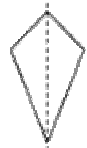
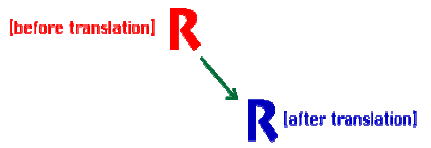
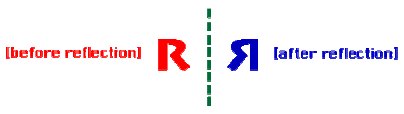
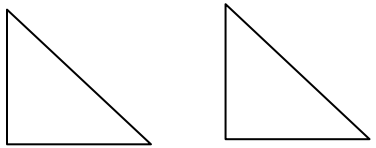
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>3. Name and identify parallel and perpendicular lines.</p>	<ul style="list-style-type: none"> <li>• <b>Perpendicular lines</b> are lines that cross to form a right angle. <b>Example:</b></li> </ul>  <ul style="list-style-type: none"> <li>• <b>Parallel lines</b> are lines that never cross. <b>Example</b></li> </ul> 	<ul style="list-style-type: none"> <li>• Show perpendicular and parallel lines using sticks or other straight objects.</li> <li>• Use street maps to identify perpendicular and parallel lines.</li> </ul>	<ul style="list-style-type: none"> <li>• enVisionMath Bk 3, p. 242</li> <li>• toothpicks</li> </ul>	<p>Lesson Quiz: Describe the lines. Write perpendicular or parallel.</p>  <p style="text-align: center;">perpendicular</p>  <p style="text-align: center;">parallel</p>  <p style="text-align: center;">perpendicular</p>

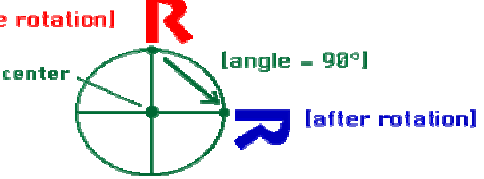
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
4. Identify shapes with multiple lines of symmetry.	<ul style="list-style-type: none"> <li>A figure has symmetry if it can be folded along a line so that the two parts match exactly, the line is called a line of symmetry.</li> </ul> 	<ul style="list-style-type: none"> <li>Trace and fold different paper figures to show lines of symmetry.</li> </ul> <p>E.g.</p>  <p style="text-align: center;"><b>Fold</b></p> <ul style="list-style-type: none"> <li>Draw in lines of symmetry on different shapes.</li> </ul>	<ul style="list-style-type: none"> <li>Game: Challenge 19.1 from Harcourt Math Book 3 Teacher's Edition , pg. 385</li> </ul>	<p><b>Lesson Quiz</b></p> <ul style="list-style-type: none"> <li>Which letters has one line of symmetry? O                      Q X                      U</li> <li>Which number has multiple lines of symmetry? 5                      7 6                      8</li> </ul>
5. Demonstrate translation (slide), reflection (flip) and rotation (turn). Continued	<ul style="list-style-type: none"> <li>A <b>plane figure</b> can be moved in different ways: translation, reflection, and rotation.</li> <li>You translate a figure when you move it in a straight line.</li> </ul>  <ul style="list-style-type: none"> <li>You reflect a figure when you move it over a line.</li> </ul> 	<p><b>Geometry Dance</b></p> <p>a. Teach students the steps on how to move if you were doing a slide (simply sliding one foot in a horizontal, vertical, or diagonal motion and then moving the other foot to join it).</p> <p>b. A flip (facing one direction, then doing a 180 jump to face the opposite direction), or a turn (one foot stays in place and we rotate 90 degrees for each foot...kind of like a pivot in basketball). I am the "caller" for the dance and they complete the movements as I call them out randomly.</p> <ul style="list-style-type: none"> <li>Play "Simon Says" with these movements.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4</li> <li><a href="http://www.proteacher.org/c/314_Flips_Slides_and_Turns.html">http://www.proteacher.org/c/314_Flips_Slides_and_Turns.html</a></li> </ul>	<ul style="list-style-type: none"> <li>Use cutouts and a grid to show slides, flips, and turns. <b>For example</b>, paste a right angle triangle to show slide, flips, and turns.</li> <li>Flip, slide, and turn different objects. Talk about how objects look after.</li> <li>Tell what kind of motion was used to move each plane figure. Write slide, flip or turn.</li> </ul> <p>E.</p>  <p style="text-align: center;"><b>Slide</b></p>

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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
5. Demonstrate translation (slide), reflection (flip) and rotation (turn).	<ul style="list-style-type: none"> <li>You rotate a figure when you turn it around a point.</li> </ul> 			
6. Name, identify, and draw up to 10-sided polygons (Continued).	<ul style="list-style-type: none"> <li>A <b>closed figure</b> begins and ends at the same point.</li> <li>An <b>open figure</b> has ends that do not meet.</li> <li>A <b>circle</b> is an example of a plane figure that has no straight sides.</li> <li>A <b>polygon</b> is a closed plane figure with straight sides that are line segments.</li> </ul> <p>Examples of polygons:</p>	<ul style="list-style-type: none"> <li>Name and sort polygons by the number of sides or angles they have.</li> <li>Draw and label polygons.</li> <li>Use Popsicle sticks, straws etc to create polygons.</li> </ul>	<ul style="list-style-type: none"> <li><a href="http://www.aaamath.com/">www.aaamath.com/</a></li> <li>Mathematics In Motion: A Resource Book for Primary Teachers, pg. 87</li> </ul>	<ul style="list-style-type: none"> <li>Name places where you have seen circles, polygons, and solid figures.</li> <li>Use a variety of materials to create different polygons and identify number of sides and angles.</li> </ul>

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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																														
6. Name, identify, and draw up to 10-sided polygons.	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3" style="text-align: center;"><b>Names of Polygons</b></th> </tr> <tr> <th style="text-align: left;">Name</th> <th style="text-align: center;">Sides</th> <th style="text-align: center;">Angles</th> </tr> </thead> <tbody> <tr> <td>Triangle</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Quadrilateral</td> <td style="text-align: center;">4</td> <td style="text-align: center;">4</td> </tr> <tr> <td>Pentagon</td> <td style="text-align: center;">5</td> <td style="text-align: center;">5</td> </tr> <tr> <td>Hexagon</td> <td style="text-align: center;">6</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Heptagon</td> <td style="text-align: center;">7</td> <td style="text-align: center;">7</td> </tr> <tr> <td>Octagon</td> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> </tr> <tr> <td>Nonagon</td> <td style="text-align: center;">9</td> <td style="text-align: center;">9</td> </tr> <tr> <td>Decagon</td> <td style="text-align: center;">10</td> <td style="text-align: center;">10</td> </tr> </tbody> </table>	<b>Names of Polygons</b>			Name	Sides	Angles	Triangle	3	3	Quadrilateral	4	4	Pentagon	5	5	Hexagon	6	6	Heptagon	7	7	Octagon	8	8	Nonagon	9	9	Decagon	10	10			
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7. Determine the number of faces, edges, and vertices on a given solid.	<ul style="list-style-type: none"> <li>• The face of a solid is a polygon. The surface is flat.</li> <li>• An edge is the line made where two or more faces of a solid figure meet.</li> <li>• Vertex is a point at which two rays of an angle or two or more line segments meet in a plane figure. In solid shapes, it is where three or more sides meet.</li> </ul>	<ul style="list-style-type: none"> <li>• Copy and complete a table putting in number of faces, edges and vertices of given polygon.</li> <li>• Create solid figures and highlight the faces, edges, and vertices.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pg. 50</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the faces, edges, and vertices of solid figures.</li> </ul>																														

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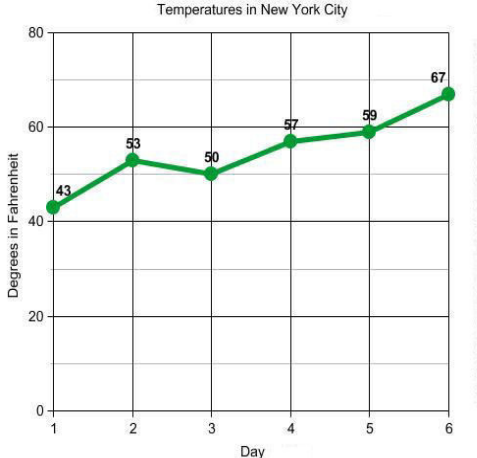
**Sub-Goal 6: Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.**

**Essential Questions**

1. How are bar and line graphs similar and different?
2. Why is it essential to calculate mean/average, median, mode, and range of data?
3. Why is it important to use compensation strategy to find means/averages?
4. How is probability used to predict outcomes?

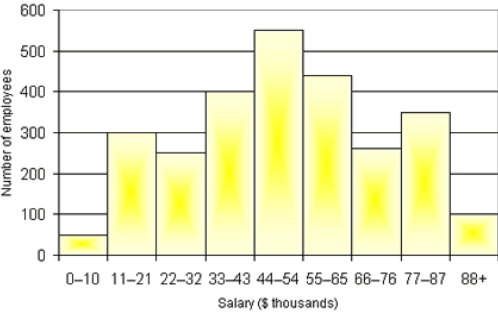
**SCOPE OF WORK  
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**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Graph data on a line graph.</p>	<ul style="list-style-type: none"> <li>Information about people or things is called <b>data</b>. <b>Data</b> can be collected and organized in different ways.</li> <li>A <b>line graph</b> connects points to show how data changes over time.</li> </ul> <div style="text-align: center;">  <p style="font-size: small;">Copyright © 2007 Mrs. Glazier's Math Goodies, Inc. All Rights Reserved. http://www.mathgoodies.com</p> </div> <ul style="list-style-type: none"> <li>The <b>scale</b> consists of numbers that show the units used on a graph.</li> <li>The <b>interval</b> is the amount between tick marks on the scale.</li> </ul>	<ul style="list-style-type: none"> <li>Students collect data; then show data on line graph. E.g. Number of bicycles that was sold for seven months (January – July) or the temperature recorded for one week etc.</li> <li>Give graphs a title, scale, and labels. Talk about the data collected then show how to place points on the grid for each number in the table. Connect the points to make the line.</li> <li>Analyze line graphs through discussion.</li> </ul> <p><b>Example:</b></p> <ol style="list-style-type: none"> <li>Does a line graph have a scale?</li> <li>Does a line graph show a range?</li> <li>Does a line graph show a mode?</li> <li>Can you make prediction based on data in line and bar graphs?</li> </ol>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 3 Teacher's Edition Volume 2</li> </ul>	<ul style="list-style-type: none"> <li>Discuss how horizontal and vertical bar graphs are alike and different</li> <li>Journal Writing: Explain why it is important to choose the right scale for your graph</li> </ul>

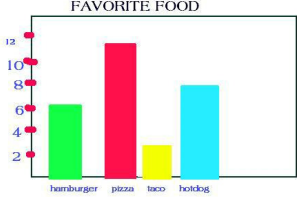
**SCOPE OF WORK  
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**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>																				
<p>2. Compare and contrast the different uses of bar and line graphs (Continued).</p>	<ul style="list-style-type: none"> <li>• A <b>bar graph</b> uses bars to show data.</li> <li>• Samples such as surveys and inventories are used to collect data. In a vertical bar graph, the bars go up from the bottom. In a horizontal bar graph, the bars go across from the left.</li> <li>• Line graphs show data change over time.</li> <li>• <b>NOTE:</b> Do not confuse bar graphs and histograms. The bars in bar graphs do not touch but in a histogram they do.</li> </ul> <p style="text-align: center;"><b>Example of a Histogram</b> <b>Salaries</b></p>  <table border="1" style="display: none;"> <caption>Data for Histogram: Salaries</caption> <thead> <tr> <th>Salary (\$ thousands)</th> <th>Number of employees</th> </tr> </thead> <tbody> <tr><td>0-10</td><td>50</td></tr> <tr><td>11-21</td><td>300</td></tr> <tr><td>22-32</td><td>250</td></tr> <tr><td>33-43</td><td>400</td></tr> <tr><td>44-54</td><td>550</td></tr> <tr><td>55-65</td><td>450</td></tr> <tr><td>66-76</td><td>250</td></tr> <tr><td>77-87</td><td>350</td></tr> <tr><td>88+</td><td>100</td></tr> </tbody> </table>	Salary (\$ thousands)	Number of employees	0-10	50	11-21	300	22-32	250	33-43	400	44-54	550	55-65	450	66-76	250	77-87	350	88+	100	<ul style="list-style-type: none"> <li>• Students examine line and bar graphs, and write how each is used in the classroom or in the community.</li> <li>• <b>True or False Line</b> Students examine line and bar graphs where they create true or false questions/statements to describe the use of the graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• enVisionMath Bk 5, pgs. 433-437 &amp; 436-439</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss how line graph and bar graph differ.</li> <li>• Complete Venn diagrams to compare and contrast the different uses of bar and line graphs.</li> </ul>
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**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT										
<p>2. Compare and contrast the different uses of bar and line graphs.</p>	<p><b>Example of Bar Graph</b></p>  <table border="1"> <caption>FAVORITE FOOD</caption> <thead> <tr> <th>Food</th> <th>Number of Students</th> </tr> </thead> <tbody> <tr> <td>hamburger</td> <td>6</td> </tr> <tr> <td>pizza</td> <td>11</td> </tr> <tr> <td>taco</td> <td>3</td> </tr> <tr> <td>hotdog</td> <td>8</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• How are bar graphs and line graphs different? <ul style="list-style-type: none"> <li>a. A line graph is a continuous graph and a bar graph is separated.</li> <li>b. A bar graph is composed of bars while the line graph is composed of lines.</li> </ul> </li> <li>• How are bar graphs and line graphs alike? <ul style="list-style-type: none"> <li>a. Bar and line graphs are used for collecting and organizing data.</li> </ul> </li> </ul>	Food	Number of Students	hamburger	6	pizza	11	taco	3	hotdog	8			
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**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Collect, record, organize, and analyze data for bar and line graphs	<ul style="list-style-type: none"> <li>• Collect data using different techniques (observations, polls, tallying, interviews, surveys, or random sampling) and explain the results.</li> <li>• Organize, display, and read numerical (quantitative) and non-numerical (qualitative) data in a clear, organized, and accurate manner including a title, labels, categories, and whole number and decimal intervals using these <b>data displays</b> <ol style="list-style-type: none"> <li>a. graphs using concrete objects</li> <li>b. pictographs</li> <li>c. bar and line graphs</li> <li>d. Venn diagrams and other pictorial</li> <li>e. displays</li> <li>f. line plots</li> <li>g. charts and tables</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Have students record the number of specific types of vehicles that pass the school. Guide students to record the outcomes on bar graphs.</li> <li>• Use the seven day temperature forecast (printed in the newspaper) where students record data on line graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• enVisionMath Bk 5, pgs. 433-437 &amp; 436-439</li> <li>• newspaper</li> </ul>	<ul style="list-style-type: none"> <li>• Journal Writing: Students write steps on how to create graphs.</li> <li>• Students create graphs and draw conclusions using a set of data.</li> </ul>
4. Explain and calculate the average arithmetical mean of set of data (Continued).	<ul style="list-style-type: none"> <li>• <b>Mean</b> is the average of a set of data.</li> <li>• The mean is found by adding all the addends (numbers) in a set and dividing by the amount of numbers added.  Example: Joshua’s scores on his science test: 80, 264, 68. What is his average quiz score?</li> </ul>	<ul style="list-style-type: none"> <li>• Work in small groups to find mean of a set of given numbers.</li> <li>• Create raps, poems, or song to explain how to find the mean.</li> </ul>	<ul style="list-style-type: none"> <li>• enVisionMath Bk 5, pgs. 450 &amp; 451</li> </ul>	<ul style="list-style-type: none"> <li>• Calculate the mean of given data.</li> <li>• Students write mean related problems and provide answers for the same.</li> </ul>

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GRADE 4**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
4. Explain and calculate the average arithmetical mean of set of data.	<b>Steps</b> <b>a.</b> Add the ones place. Regroup. <b>b.</b> Add the tens place. Regroup. <b>c.</b> Add the hundreds place. <b>d.</b> Divide total/sum by 3 $396 \div 3 = 132$ Joshua's average science score is <b>132</b> .			
5. Estimate the average /mean of a set of data using mental arithmetical.	<ul style="list-style-type: none"> <li>To estimate the average/ mean of a set of data, use the compensation strategy for addition.</li> <li>Compensation in math means, adding and subtracting the same number to make the sum or difference easier to find.</li> </ul>	<ul style="list-style-type: none"> <li>Guide students to estimate averages. Use numbers that can be easily adjusted.  Example: 3, 5, 4  Take 1 from 5, which is 4. Add the 1 from the 5 to 3 to make 4. You will get  4, 4, 4  The mean is 4</li> </ul>	<ul style="list-style-type: none"> <li><a href="http://www.wiki.answers.com">http://www.wiki.answers.com</a></li> </ul>	<ul style="list-style-type: none"> <li>Students will explain how to use compensation to estimate averages/means.</li> </ul>
6. Identify the mode, median, and range of a set of data (Continued).	<ul style="list-style-type: none"> <li><b>Range</b> is the difference between the greatest number and the least number in a set of data.</li> <li>The <b>median</b> is the middle number in an ordered set of data.               <ol style="list-style-type: none"> <li>Put the data in order from least to greatest. <b>Example:</b> 40, 41, 42, 45, 45, 46, 47 The median is 45</li> </ol> </li> </ul>	<b>Card Game</b> <ol style="list-style-type: none"> <li>Use only the Ace through 10 cards.</li> <li>Deal out 7 cards to each player (be sure there is a maximum of 4 players).</li> <li>Each player arranges his/her cards in sequential order. Aces count as the number 1.</li> </ol>	<ul style="list-style-type: none"> <li><a href="http://www.education.com">www.education.com</a></li> <li>enVisionMath Bk. 4 pg. 414</li> <li>Mathematics in Motion: A Resource Book for Primary Teachers, pg. 27</li> </ul>	<ul style="list-style-type: none"> <li>Students answer the question in their mathematics journals: What do the mode, median, and range tell you about your class?</li> <li>Participate in a debate to tell if the mode or median is easier and more exciting to identify.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: STATISTICS AND PROBABILITY**  
**GRADE 4**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
6. Identify the mode, median, and range of a set.	<ul style="list-style-type: none"> <li>• <b>Mode</b> is the number or item that occurs most often in a set of data.</li> <li>a. Using the data above the mode is 45</li> <li>b. The range is <math>47 - 40 = 7</math></li> </ul>	<ul style="list-style-type: none"> <li>d. Each player finds the median card in his or her hand and that number is his or her point value for that round.</li> <li>e. Players then find the mode and range of the numbers.</li> <li>• Students can use their shoe sizes, ages, or height to identify, mode, median, and ranges.</li> </ul>		
7. Perform simple experiment and record probability.	<ul style="list-style-type: none"> <li>• Probability is the chance that an event will happen.</li> <li>• An event is certain if it will always happen.</li> <li>• An event is impossible if it will never happen.</li> <li>• Vocabulary: event impossible, probability, certain, likely, unlikely.</li> </ul>	<ul style="list-style-type: none"> <li>• Create spinners with names of government buildings (e.g. hospitals, libraries, schools). Have students manipulate the spinner and record the results.</li> <li>• Debate to tell if there is a strategy to win the game.</li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics in Motion: A Resource Book for Primary Teachers, pg. 32</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Journal Writing:</b> A bag contains 10 blue marbles, 6 red marbles, 2 green marbles, and 1 white marble. Describe events that are certain, impossible, likely, and unlikely to happen when you pull a marble from this bag.</li> <li>• <b>Rotten Apple:</b> Create “n” cutouts of apples. Write the word rotten on the backside of “n” apples. Place the apples in a bag where students alternately pull an apple from the bag. If students pull a “good” apple out of the bag, he/she remains in the game. If a rotten apple is pulled, the student is out. When all the apples are removed, the students will write probabilities for good and rotten apples.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: STATISTICS AND PROBABILITY  
GRADE 4**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods, predict results, and interpret uncertainty using concepts of probability.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
8. Write probability as a fraction or ratio.	<ul style="list-style-type: none"> <li>• There are several ways of writing the probability. You can write probability as a fraction or a ratio.</li> <li>1 out of 8 – probability</li> <li>1/8- fraction</li> <li>1 to 8- ratio</li> <li>3:8-ratio</li> </ul>	<ul style="list-style-type: none"> <li>• Use scenarios where students will write probability as a fraction or a ratio.</li> <li>• Students create game cards with possible solutions.</li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics in Motion: A Resource Book for Primary Teachers, pg. 30</li> </ul>	<ul style="list-style-type: none"> <li>• Lesson Quiz: Write probability as fractions or ratios.</li> <li>• Orally discuss the difference between probability as fractions or ratios.</li> </ul>

# **Scope of Work**

## **Primary School Mathematics**

### **Grade 5**

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

**Essential Questions**

1. Where are numbers to a billion found and how do they affect our daily lives?
2. How can expanded notation of numbers help explain a number's value?
3. How does estimation, rounding, comparing, ordering/operations of whole numbers, and decimals aid problem solving?
4. What are prime and composite numbers?
5. How are factors and multiples beneficial in math?
6. When are fractions and whole numbers used together in real life?
7. What is the relationship between fractions and decimals?

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

Sub-Goal 1: Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT									
1. Write numerals and word names to millions.	<ul style="list-style-type: none"> <li>Each group of 3 digits is called a period. A space separates each of the periods. The number 259 792 257 has three periods: ones, thousands, and millions.</li> <li>Place value and periods help you read and write numbers in standard form. 259 792 257               <ul style="list-style-type: none"> <li><b>a. Word Form:</b> two hundred fifty- nine million, seven hundred ninety- two thousand, two hundred fifty- seven.</li> <li><b>b. Expanded form</b> <math>200\,000\,000 + 50\,000\,000 + 9\,000\,000 + 700\,000 + 90\,000 + 2\,000 + 200 + 50 + 7</math>.</li> </ul> </li> <li>Reading and writing numbers are symbolic activities and should follow much modeling and talking about numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Complete the following chart.               <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Standard Form</th> <th>Word Form</th> <th>Expanded Form</th> </tr> </thead> <tbody> <tr> <td>54 060 900</td> <td style="text-align: center;">?</td> <td><math>50\,000\,000 + 4\,000\,000 + 60\,000 + 900</math></td> </tr> <tr> <td style="text-align: center;">?</td> <td>twelve thousand, three hundred, sixty-eight</td> <td style="text-align: center;">?</td> </tr> </tbody> </table> </li> <li>Create game cards in sets of threes:               <ul style="list-style-type: none"> <li>a. Standard Form: 603</li> <li>b. Word Form: Six hundred, three</li> <li>c. Expanded Form: <math>600 + 3</math></li> </ul>               Play concentration type game             </li> </ul>	Standard Form	Word Form	Expanded Form	54 060 900	?	$50\,000\,000 + 4\,000\,000 + 60\,000 + 900$	?	twelve thousand, three hundred, sixty-eight	?	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 8-11;</li> <li>Helping Children Learn Mathematics pg. 186</li> <li>Harcourt Math Newsroom video: Supernova Blast</li> </ul>	<ul style="list-style-type: none"> <li>Students complete Practice and Problem Solving, on page 10 of Harcourt Bk. 4 (nos. 24-26, 30)</li> </ul>
Standard Form	Word Form	Expanded Form											
54 060 900	?	$50\,000\,000 + 4\,000\,000 + 60\,000 + 900$											
?	twelve thousand, three hundred, sixty-eight	?											

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Identify the place value of digits in whole numbers up to millions.	<ul style="list-style-type: none"> <li>• The period to the left of thousands is millions.</li> <li>• The period to the left of ones is thousands.</li> <li>• The position of a digit represents its value. Ten is the value that determines a new collection.</li> <li>• A symbol for zero exists and allows us to represent symbolically the absence of something.</li> </ul>	<p><b>Game: Pick and Put</b></p> <ul style="list-style-type: none"> <li>• Show students a place value chart and ask them to select a numeral from a bag. The card with the numeral will have its position on the other side. The students will correctly place the number in the correct column on the place value chart.</li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics for Elementary Teachers pg. 103</li> <li>• Harcourt Math Bk. 4 pgs. 8 &amp; 9</li> <li>• Bag</li> <li>• Cards</li> <li>• Flannel</li> <li>• bowl</li> </ul>	<ul style="list-style-type: none"> <li>• Test: Identify and write the place value of each digit in given numbers.</li> </ul>
3. Compare and order whole numbers, fractions, and decimals using $<$ , $>$ , and $=$ (Continued).	<ul style="list-style-type: none"> <li>• The symbol "<math>&lt;</math>" means less than.</li> <li>• The symbol "<math>&gt;</math>" means greater than.</li> <li>• The symbol "<math>=</math>" means equal to.</li> <li>• Use the above symbols when comparing and ordering fractions, decimals, and whole numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Race</b></li> <li>a. Students are placed into three groups. Group A <math>&gt;</math>, Group B <math>&lt;</math>, and Group C <math>=</math></li> <li>b. Teacher writes questions on the chalkboard or whiteboard.</li> <li>c. Students place correct symbol to answer the question.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs.18-25</li> <li>• Harcourt Math Bk. 4 pgs. 372, 418, 17 &amp; 18</li> <li>• Helping Children Learn Mathematics pgs. 291-295, 306</li> </ul>	<ul style="list-style-type: none"> <li>• Students are given sets of numbers. They are to write true or false to describe the condition.</li> </ul> <p><b>Example</b> 16 592 <math>&lt;</math> 16952 <b>True</b> <b>If the answer is false, students explain why.</b></p>



**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

**Sub-Goal1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
3. Compare and order whole numbers, fractions, and decimals using $<$ , $>$ , and $=$ (Continued)	<ul style="list-style-type: none"> <li><b>Whole Numbers</b></li> </ul> Compare 23 400 836 and 23 317 600. <b>Step 1</b> Start with the first place on the left. Compare the ten millions. $\begin{array}{r} 23\ 400\ 836 \\ \downarrow \\ 23\ 317\ 600 \end{array} \quad 2 = 2$ There are the same number of ten millions. <b>Step 2:</b> compare the millions. $\begin{array}{r} 23\ 400\ 836 \\ \downarrow \\ 23\ 317\ 600 \end{array} \quad 3 = 3$ There are the same number of millions. <b>Step 3:</b> compare the hundred thousands. $\begin{array}{r} 23\ 400\ 836 \\ \downarrow \\ 23\ 317\ 600 \end{array} \quad 4 > 3$ Four hundred thousand is greater than three hundred thousand. $23\ 400\ 836 > 23\ 317\ 600$ <b>Comparing Decimals</b> <ul style="list-style-type: none"> <li>Order 1.23; 0.98; and 1.28 from least to greatest.</li> </ul>			

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

Sub-Goal1: Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS												
3. Compare and order whole numbers, fractions, and decimals using $<$ , $>$ , and $=$ (continued)	<ul style="list-style-type: none"> <li>Line up the decimal points. Compare the digits in the greatest place.           <div style="text-align: center;"> <math display="block">\begin{array}{r} 1.23 \\ \downarrow \\ 0.98 \end{array} \quad 0 &lt; 1</math> <math display="block">\begin{array}{r} 1.23 \\ \downarrow \\ 1.28 \end{array}</math> </div>           Since <math>0 &lt; 1</math>, then 0.98 is the least number.         </li> <li><b>Step 2:</b> Compare the tenths.           <div style="text-align: center;"> <math display="block">\begin{array}{r} 1.23 \\ \downarrow \\ 1.28 \end{array} \quad 2 = 2</math> </div>           There is the same number of tenths.         </li> <li><b>Step 3:</b> Compare the hundredths           <div style="text-align: center;"> <math display="block">\begin{array}{r} 1.23 \\ \downarrow \\ 1.28 \end{array} \quad 3 &gt; 8</math> </div>           So, the order from least to greatest is 0.98; 1.23; 1.28         </li> </ul>	<ul style="list-style-type: none"> <li>Students use number line to order numbers. Example: 9.4; 9.63; and 9.27 from greatest to least.           <div style="text-align: center;"> </div>           So the order is 9.63, 9.4, 9.27         </li> <li><b>What's your answer?</b> Use the data in this table. These are data about the countries of the United Kingdom.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Country</th> <th>Area Thousandths of km<sup>2</sup></th> <th>Population (millions)</th> </tr> </thead> <tbody> <tr> <td>England</td> <td>50.363</td> <td>46.221</td> </tr> <tr> <td>N.Ireland</td> <td>5.452</td> <td>1.543</td> </tr> <tr> <td>Scotland</td> <td>30.415</td> <td>5.131</td> </tr> </tbody> </table> <p>Answer these questions</p> <ol style="list-style-type: none"> <li>Order the countries from least to greatest in terms of population.</li> <li>Order the countries from greatest to least in terms of area.</li> </ol>	Country	Area Thousandths of km <sup>2</sup>	Population (millions)	England	50.363	46.221	N.Ireland	5.452	1.543	Scotland	30.415	5.131		
Country	Area Thousandths of km <sup>2</sup>	Population (millions)														
England	50.363	46.221														
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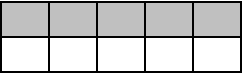
**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

Sub-Goal1: Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
3. Compare and order whole numbers, fractions, and decimals using $<$ , $>$ , and $=$ .	<ul style="list-style-type: none"> <li>Write the decimal from greatest to least order. Example: 0.813; 0.6; 0.65</li> </ul> <p>0.813    think    <math>8 &gt; 6</math>, so 0.813 is the greatest</p> <p>0.6      0.600    0.6 is equivalent to 0.600</p> <p>↓</p> <p>0.65    0.650    0.65 is equivalent to 0.650</p> <p>0.65    0.650    <math>0 &gt; 5</math>, so 0.6 is the least</p> <p>The order from least to greatest is 0.6; 0.65; 0.813</p>			
4. Order fractions, decimals, and whole numbers in ascending and descending order.	<ul style="list-style-type: none"> <li>Ordering fractions shows which is more, less, or equal.</li> <li>Symbols such as <math>&gt;</math>, <math>&lt;</math>, or <math>=</math> are used to order fractions, decimals and whole numbers.</li> <li>Example <math>1/6 &lt; 1/2 &lt; 2/3</math></li> </ul>	<ul style="list-style-type: none"> <li>Compare given fractions using fraction bars.</li> </ul> <p><b>Example:</b>            Compare <math>1/2</math> and <math>2/3</math> by using fraction bars.</p> <p><b>Step 1.</b> Start with the bar. For 1, line up fraction bar for <math>1/2</math>.</p> <p><b>Step 2.</b> Line up the fraction bar for <math>2/3</math>.            Compare the two rows of fraction bars. The longer row represents the greater fraction.</p> <ul style="list-style-type: none"> <li>Students use the number line to order fractions, decimals, and whole numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 20, 372, 418</li> <li>Mighty Math Number Heroes CD</li> </ul>	<ul style="list-style-type: none"> <li>Have students order fractions, decimals, and whole numbers on a number line.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>5. Explain the difference between even/ odd numbers, whole numbers, fractions, decimals, and perfect squares (Continued).</p>	<ul style="list-style-type: none"> <li>• <b>Even numbers</b> are divisible by 2 and end with a digit of 0, 2, 4, 6, or 8. Example 2 ; 48 ; 4 000</li> <li>• <b>Odd numbers</b> are not divisible by 2. Odd numbers always end with a digit of 1, 3, 5, 7, or 9. Example 47 ; 139; 47 003</li> <li>• <b>Whole numbers</b> (one of the numbers 0, 1, 2, 3, 4 ... The set of whole numbers go on without end.</li> <li>• <b>Fractions</b> are equal parts of a whole or a region.</li> <li>• <b>Decimals:</b> Numbers with one or more digits to the right of the decimal point.</li> <li>• A <b>square number</b> is the product of two equal factors. Example: <math>7 \times 7 = 49</math>; <math>6 \times 6 = 36</math></li> <li>• To find some square numbers start by multiplying <math>1 \times 1</math>. So 1 is a square number.</li> <li>• The <b>square root</b> of a number is one of the 2 equal factors of the product.</li> </ul>	<ul style="list-style-type: none"> <li>• Use grids to identify fractions and decimal numbers.</li> </ul> <div style="text-align: center;">  </div> <p><b>Read:</b> five tenths <b>Write :</b> <math>5/10</math> or <math>0.5</math></p> <ul style="list-style-type: none"> <li>• <b>Hocus Pocus</b> <ol style="list-style-type: none"> <li>a. Students will select a word from a bag (fraction, decimal, even, odd, and square numbers). They will not be allowed to view the term they have selected.</li> <li>b. Student A will select a peer (B) who will define the term. If the student A is satisfied with the definition, the teacher will select a term for student B and ask him/ her to explain the difference between the two.</li> <li>c. Student A will be responsible for defining the term student B selected. Some cards will have the definitions at the back.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math pgs. 298-299, 406</li> <li>• Mathematics for Elementary Teachers pg.194</li> <li>• bag</li> <li>• cards</li> </ul>	<ul style="list-style-type: none"> <li>• Students create dictionaries with vocabulary words, definitions, and example.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
5. Explain the difference between <b>even/ odd numbers, whole numbers, fractions, decimals, and perfect squares</b> (Continued).	<ul style="list-style-type: none"> <li>• Another way to write <math>3 \times 3</math> is <math>3^2</math>. This is read as three squared.</li> </ul>			
6. Use the terms <b>sum, difference, product, quotient, factor, divisor, dividend, and remainder</b> appropriately (Continued).	<ul style="list-style-type: none"> <li>• <b>Sum:</b> The answer to an addition problem. In the addition equation <math>a + b = c</math>, <b>c is called the sum.</b></li> <li>• <b>Difference:</b> The answer to a subtraction problem. In the subtraction equation <math>b - c = d</math>, <b>d is the difference,</b></li> <li>• <b>Product:</b> The result of multiplication Example: <math>7 \times 9 = 63</math> 63 is the product</li> <li>• <b>Quotient:</b> The number, not including the remainder, that results from dividing.</li> <li>• <b>Factor:</b> Describe parts of any multiplication problem such as <math>2 \quad \times \quad 5 \quad = \quad 10</math> <math>\uparrow \quad \text{factors} \quad \uparrow \quad \quad \quad \uparrow</math> product</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Define Me</b> <ol style="list-style-type: none"> <li>a. Student selects four classmates to form a group.</li> <li>b. The first student selects a term out of a bag and defines it.</li> <li>c. He/she then takes the bag to his group member who selects another term (sum, difference, product, quotient, divisor, dividend) and defines 'it' until all are defined correctly. (Time and compare results)</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs. 34 &amp; 35, 40-46, 412-306</li> <li>• bags</li> </ul>	<ul style="list-style-type: none"> <li>• Have students identify terms of equations and solve them.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 5**

**Sub-Goal1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS																		
6. Use the terms sum, difference, product quotient, factor, divisor, dividend, and remainder appropriately.	<ul style="list-style-type: none"> <li>• <b>Dividend:</b> The number that is to be divided in a division problem.</li> <li>• <b>Divisor:</b> The number that is used to divide the dividend</li> <li>• <b>Remainder:</b> The amount left over after you find the quotient.</li> </ul>																					
7. Identify equivalent fractions and decimals (Continued).	<ul style="list-style-type: none"> <li>• Fractions that name the same amount are called equivalent fractions.</li> <li>• You can use fraction strips or multiplication to find equivalent fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students use fraction bars to find equivalent fractions.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td colspan="6">1</td> </tr> <tr> <td colspan="2">1/3</td> <td colspan="2">1/3</td> <td colspan="2">1/3</td> </tr> <tr> <td>1/6</td> <td>1/6</td> <td>1/6</td> <td>1/6</td> <td>1/6</td> <td>1/6</td> </tr> </table> <ul style="list-style-type: none"> <li>• Have students create decimal models that are equivalent.</li> </ul>	1						1/3		1/3		1/3		1/6	1/6	1/6	1/6	1/6	1/6	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs. 366 and 412</li> <li>• Equivalent fractions: <a href="http://www.harcourtschool.com/elab 2002">http://www.harcourtschool.com/elab 2002</a></li> </ul>	<ul style="list-style-type: none"> <li>• Students discuss how to find equivalent fractions.</li> <li>• Students write a poem, rap, or a skit on equivalent decimals.</li> </ul>
1																						
1/3		1/3		1/3																		
1/6	1/6	1/6	1/6	1/6	1/6																	

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
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**Sub-Goal1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS																																				
7. Identify equivalent fractions and decimals.	<p>Find equivalent fraction for <math>\frac{5}{6}</math>.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="12" style="text-align: center;"><b>1</b></td> </tr> <tr> <td colspan="2" style="text-align: center;"><math>\frac{1}{6}</math></td> <td colspan="2" style="text-align: center;"><math>\frac{1}{6}</math></td> <td colspan="2" style="text-align: center;"><math>\frac{1}{6}</math></td> <td colspan="2" style="text-align: center;"><math>\frac{1}{6}</math></td> <td colspan="2" style="text-align: center;"><math>\frac{1}{6}</math></td> <td colspan="2" style="text-align: center;"><math>\frac{1}{6}</math></td> </tr> <tr> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> <td style="text-align: center;"><math>\frac{1}{12}</math></td> </tr> </table> <ul style="list-style-type: none"> <li>• Another way to find equivalent fraction is to use multiplication.</li> <li>• Multiply the numerator and denominator by 2.  <math display="block">\frac{5}{6} = \frac{\underline{5}}{6} \times \frac{2}{2} = \frac{10}{12}</math></li> <li>• <b>Verifying equivalent fractions</b>            In one group, 18 out 30 students (<math>\frac{18}{30}</math>) prefer guineps to sea grapes and in a second group 24 out of 40 students (<math>\frac{24}{40}</math>) prefer guineps over sea grapes. How do the group preference compare? Since <math>\frac{18}{30} = \frac{3}{5}</math> and <math>\frac{24}{40} = \frac{3}{5}</math>, the same fraction of each group prefers guineps and sea grapes.</li> <li>• Equivalent decimals name the same number.  <b>Example:</b> <math>0.2 = 0.20</math></li> </ul>	<b>1</b>												$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$			
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**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

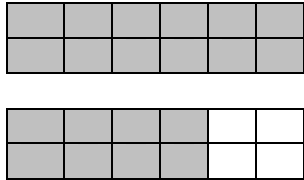
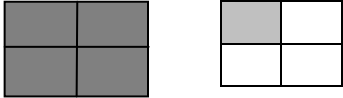
**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
8. Simplify fractions to lowest terms.	<ul style="list-style-type: none"> <li>• <b>Simplest form:</b> fractions with a numerator and denominator that have only 1 as a common factor.</li> </ul> <p><b>Example</b>            Find the simplest form of 45/60. Try 5            Divide the numerator and denominator by 5.  <math display="block">\frac{45}{60} = \frac{45 \div 5}{60 \div 5} = \frac{9}{12}</math></p> <p>Next try 3. Divide the numerator and denominator by 3.  <math display="block">\frac{9}{12} = \frac{9 \div 3}{12 \div 3} = \frac{3}{4}</math></p>	<ul style="list-style-type: none"> <li>• <b>Equivalent Blast</b> <ol style="list-style-type: none"> <li>a. Give students fractions to simplify.</li> <li>b. The winner explains what he/she did before the next problem is given.</li> <li>c. The student with the most correct responses wins.</li> </ol> </li> <li>• <b>Psyche</b> <ol style="list-style-type: none"> <li>a. Students work in groups. One member is blind folded and given facts about an unseen fraction by a group member. E.g. its HCF is 4.</li> <li>b. When broken down into its simplest form, the fraction is 1/2. The blind folded student has to give the correct fraction.               <ul style="list-style-type: none"> <li>• Working is done by the group members.</li> </ul> </li> <li>c. Teacher provides the original fraction.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs. 368, 372, 418</li> </ul>	<ul style="list-style-type: none"> <li>• Journal Entry: Explain how fractions are simplified. Create and solve three problems.</li> </ul>



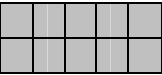
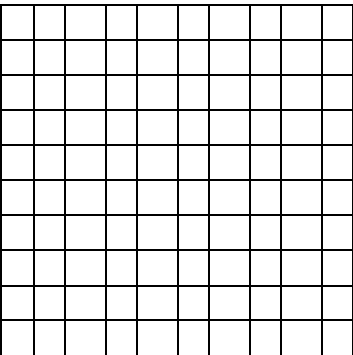
**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
<p>9. Explain the relationship between fractions and whole numbers.</p>	<ul style="list-style-type: none"> <li>A mixed number is made up of a whole number and a fraction. Use models to help students to understand this concept.  <b>Example 1</b> <math>1\frac{8}{12}</math></li> </ul>  <ul style="list-style-type: none"> <li>Reduce mixed fractions when possible  <b>Example</b> <math>1\frac{8}{12} = 1\frac{2}{3}</math></li> </ul>	<ul style="list-style-type: none"> <li>Write a mixed number for each picture</li> </ul>  <p style="text-align: center;"><math>1\frac{1}{4}</math></p> <ul style="list-style-type: none"> <li><b>Game: Model This.</b> <ol style="list-style-type: none"> <li>Students model the following questions as a group e.g.               <ol style="list-style-type: none"> <li>You have 3 pans, each with <math>\frac{4}{5}</math> of a pizza. How many pizzas do you have?</li> <li><math>6\frac{3}{7} = 5\frac{10}{7}</math>. The group that completes the activity first with the correct model wins.</li> </ol> </li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 378</li> <li>Helping Children Learn Mathematics pg. 296</li> </ul>	<ul style="list-style-type: none"> <li>Have students create a wall display to show mixed numbers.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
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**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
10. Read and write decimals through thousandths (Continued).	<ul style="list-style-type: none"> <li>A decimal is a number with one or more digits to the right of the decimal point.</li> <li>If one hundredth were divided into ten equal parts, each part would represent one thousandth. You can use a place value chart to help you understand thousandths.</li> </ul> <p>Ones   Tents   Hundredths   Thousandths            0 • 4            7            2</p> <p><b>Standard form</b>    0.472</p> <p><b>Word Form</b>    Four hundred seventy two thousandths</p> <p><b>Expanded Form</b>    0.4 + 0.07 + 0.002</p>	<ul style="list-style-type: none"> <li>Have students use graph paper to identify how to write decimals to thousandths.</li> </ul> <div style="text-align: center;">  </div> <p><b>Fraction:</b> 1/1  <b>Decimal:</b> 1.0</p> <div style="text-align: center;">  </div> <p><b>Fraction:</b> 1/ 100      <b>Decimal:</b> 0.01</p>	<ul style="list-style-type: none"> <li>Helping Children Learn Mathematics pgs. 406-410</li> <li>Harcourt Math Bk. 4 pgs. 410 and 411</li> <li>Graph paper</li> </ul>	<ul style="list-style-type: none"> <li>Create a “cheer” to tell how to write/read decimals.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
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**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS																
11. Convert fractions to decimals and vice-versa.	<ul style="list-style-type: none"> <li>Understanding fractions that have a denominator of 10 or 100 will help you understand decimals.</li> </ul> <p><b>Example</b>  Write the fraction using a denominator of 10 or 100. What decimal shows the same amount as <math>\frac{1}{2}</math>?  <math>\frac{1}{2} = \frac{1}{2} \times \frac{5}{5} = \frac{5}{10} = 0.5</math>  So, <math>\frac{1}{2}</math> is the same as 0.5</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><b>Example: Fraction</b></td> <td style="width: 50%;"><b>Decimal</b></td> </tr> <tr> <td>Write: <math>\frac{6}{10}</math></td> <td>Write: 0.6</td> </tr> <tr> <td>Read: six tenths</td> <td>Read: six tenths</td> </tr> </table> <ul style="list-style-type: none"> <li>You can write a decimal for a fraction that has a denominator other than 10 or 100.</li> </ul> <p><b>Example:</b>  <math>\frac{3}{5} = 0.6</math></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">3 divided by 5</td> <td style="width: 50%; text-align: right;"> <math display="block">\begin{array}{r} 0.6 \\ 5 \overline{) 3.0} \\ - 30 \\ \hline 00 \end{array}</math> </td> </tr> </table> <ul style="list-style-type: none"> <li>A number line divided into 100 equal parts can be used to model fractions and decimals that name the same amount in tenths or hundredths.</li> </ul>	<b>Example: Fraction</b>	<b>Decimal</b>	Write: $\frac{6}{10}$	Write: 0.6	Read: six tenths	Read: six tenths	3 divided by 5	$\begin{array}{r} 0.6 \\ 5 \overline{) 3.0} \\ - 30 \\ \hline 00 \end{array}$	<ul style="list-style-type: none"> <li>Write each decimal as a fraction.</li> </ul> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1) Oxygen: 0.47 0.08</td> <td style="width: 50%;">2) Aluminum <math>\frac{8}{100}</math></td> </tr> <tr> <td style="width: 50%; text-align: center;"><math>\frac{47}{100}</math></td> <td style="width: 50%; text-align: center;"><math>\frac{8}{100}</math></td> </tr> <tr> <td style="width: 50%;">3) Silicon: 0.28</td> <td style="width: 50%;">4) Iron: 0.05</td> </tr> <tr> <td style="width: 50%; text-align: center;"><math>\frac{28}{100}</math></td> <td style="width: 50%; text-align: center;"><math>\frac{5}{100}</math></td> </tr> </table> <ul style="list-style-type: none"> <li>Use the number line to show equivalent fractions and decimals.</li> </ul>	1) Oxygen: 0.47 0.08	2) Aluminum $\frac{8}{100}$	$\frac{47}{100}$	$\frac{8}{100}$	3) Silicon: 0.28	4) Iron: 0.05	$\frac{28}{100}$	$\frac{5}{100}$	<ul style="list-style-type: none"> <li>Helping Children Learn Mathematics pg. 204</li> <li>Harcourt Math Bk. 4 pg. 406</li> </ul>	<ul style="list-style-type: none"> <li>Complete journal entries to explain how to convert between fractions and decimals.</li> </ul>
<b>Example: Fraction</b>	<b>Decimal</b>																			
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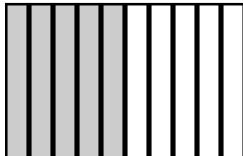
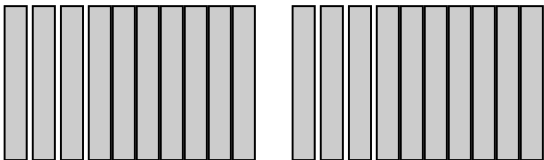
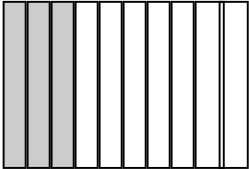
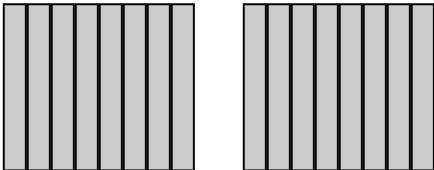
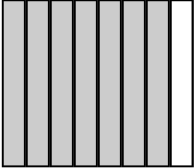
**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
12. Round decimals to nearest tenths, hundredths, and thousandths.	<ul style="list-style-type: none"> <li>Rules for rounding whole numbers apply.</li> <li><b>Remember</b> <ol style="list-style-type: none"> <li>Find the place value to which you want to round.</li> <li>Look at the digit to the right.</li> <li>If the digit is less than 5, the digit in the rounding place stays the same.</li> <li>If the digit is 5 or more, the digit in the rounding place is increased by 1.</li> </ol> <p>Round 6.079 to the nearest hundredth.            Look at the thousandth place            ↓            6.079            Since 9&gt;5, the digit 7 is increased by 1            So 6.079 rounds to 6.08</p> </li> </ul>	<ul style="list-style-type: none"> <li>Use a number line to round to nearest tenths, hundredth, and thousandths.</li> <li>“<b>What is it?</b>”           <ol style="list-style-type: none"> <li>Teacher asks questions that are answered in groups (Its academic format).</li> </ol>           e.g. <b>Questions</b> <ol style="list-style-type: none"> <li>How many tenths are in the number 24.78?</li> <li>How will you round to the nearest tenth?</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 428</li> <li>Helping Children Learn Mathematics pg. 306</li> </ul>	<ul style="list-style-type: none"> <li>Complete activity chart where students round to the nearest tenth, hundredth, and nearest thousandth.</li> </ul>
13. Represent decimals as part of a whole.	<ul style="list-style-type: none"> <li>Decimal fractions are just another notation for tenths, hundredths, and other powers-of-tens as parts of a unit.</li> <li>Partitioning a unit into tenths, results in 10 equal parts.</li> </ul>	<ul style="list-style-type: none"> <li>Use a number line or a decimal model to relate mixed numbers and decimals.</li> <li>Write an equivalent decimal and mixed number for each decimal model. Then write the word form.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 414</li> <li>Helping Children Learn Mathematics pg. 303 &amp; 304</li> </ul>	<ul style="list-style-type: none"> <li>Create wall/board display to show decimals in relation to wholes.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
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**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>13. Represent decimals as part of a whole (Continued).</p>	<p><b>Example</b></p> <p><b>Model 1:</b> </p> <p><b>Word:</b> five- tenths <b>Fraction:</b> <math>\frac{5}{10}</math> <b>Decimal:</b> 0.5</p> <p><b>Model 2:</b></p> <p> </p> <p><b>Mixed Number:</b> <math>2\frac{3}{10}</math>      <b>Decimal:</b> 2.3 <b>Read:</b> two and three –tenths</p>	<p>Example <math>2\frac{7}{8}</math></p> <p> </p> <p><b>Decimal:</b> 2.875 <b>Read:</b> Two and eight hundredth, seventy-five thousandths</p>		

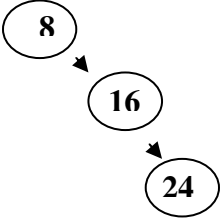
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14. Compare and order decimals through thousandths.	<ul style="list-style-type: none"> <li>You can use a number line or place value to order decimals up to thousandths.</li> <li>Remember: On a number line, the numbers to the right are greater than the numbers to the left.</li> </ul> <p><b>Example:</b> Order 0.813, 0.6, 0.65 from least to greatest.</p> <p>0.813 Think: 8&gt;6 so 0.813 is the greatest.  ↓  0.6      0.600    0.6 is equivalent to 0.600  ↓            ↓    0.65 is equivalent to 0.650  0.65      0.650      0&lt;5 so 0.6 is the least.</p> <p>Therefore from least to greatest: 0.6, 0.65, 0.813</p>	<ul style="list-style-type: none"> <li><b>Puzzled</b>  Arrange these four decimals in the boxes so that the sentence is true. (Remember to do the parts in the parentheses first.)  5.13   4.24   3.84   3.16  ( ___x 5 ) + ___ = ( 4x ___ ) + ___</li> </ul>	<ul style="list-style-type: none"> <li>Helping Children Learn Mathematics pg. 306</li> <li>Harcourt Math pg. 418</li> </ul>	<ul style="list-style-type: none"> <li>Have students use a number line to order given sets of decimals.</li> </ul>
15. Identify factors and multiples (Continued).	<ul style="list-style-type: none"> <li><b>Factors:</b> Numbers that are multiplied.</li> </ul> $\begin{array}{ccccccc} 10 & & \times & & 5 & = & 10 \\ \uparrow & & & & \uparrow & & \uparrow \\ \text{factors} & & & & & & \text{product} \\ & & & & & & \text{(multiple of 10 and 5)} \end{array}$ <ul style="list-style-type: none"> <li><b>Multiples:</b> The product of two factors.</li> </ul>	<ul style="list-style-type: none"> <li>Teacher places cards on the table with multiples written on them. Students give the factors for the multiples. For example: 56; 20; 72; 48</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.4 pgs. 148 &amp; 298</li> </ul>	<ul style="list-style-type: none"> <li>Complete speed drills to tell factors and multiples of given numbers.</li> </ul>

**SCOPE OF WORK**  
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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
15. Identify factors and multiples .		<ul style="list-style-type: none"> <li>• <b>Hoola</b> <ul style="list-style-type: none"> <li>a. Place 12 hoola hoops on the floor in a circular pattern. Students will complete rotation by jumping into the hoola hoop.</li> <li>b. Every time a new member enters the hoops, the group moves forward.</li> <li>c. The first student gives a factor of a multiple and jumps into the first hoola hoop if it is correct. If the answer is incorrect, that student sits down and another student tries.</li> <li>c. The second student gives another multiple and so forth until all hoops are emptied.</li> </ul> </li> </ul> <p><b>Example: Multiples of 8</b></p> <div style="text-align: center;">  </div>		

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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
<p>16. Identify L.C.M and G. C. F. of two numbers (Continued).</p>	<ul style="list-style-type: none"> <li>• <b>Composite numbers</b> are numbers with more than 2 factors. The numbers can be written as a product of prime factors. Example: <math>9 = 3 \times 3</math> ; <math>9 \times 1</math> The composite numbers are 1, 3, 9</li> <li>• The lowest common multiple (LCM) of two whole numbers is the smallest whole number which is a multiple of both.               <ul style="list-style-type: none"> <li>a. For example the multiples of 10 = 10, 20, 30, 40, 50,...</li> <li>          multiples of 8 = 8, 16, 24, 32, 40, 48...</li> <li>So the least common multiple of 10 and 8 is 40 or LCM (10, 8) = 40.</li> </ul> </li> <li>• The greatest common factor (GCF) of 2 whole numbers is the largest whole number which is a factor both.  E.g. Factors of 12 = 1,2,3,4, ,12       Factors of 15 = 1,3,5,15  1 and 3 are common factors. The highest common factor is 3.</li> <li>• Use factor trees as well to find prime factors.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Bowling Factors</b> <ul style="list-style-type: none"> <li>a. Students bowl down pins using cardinal numbers 0-9.</li> <li>b. Students make a number with the pins that fell. Example: pins 4 ; 0 ; 9 were knocked down. Students will create factors of 49.</li> <li>c. Students find the L. C.M. and H.C.F. of the numbers from the fallen pins.</li> </ul> </li> </ul> <p><b>Note: If all pins are knocked down, have the student bowl or try again.</b></p>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pg. 306</li> <li>• Mathematics for Elementary Teachers pgs. 207, 213, 216, 220</li> <li>• Bowling pins</li> <li>• balls</li> </ul>	<ul style="list-style-type: none"> <li>• Students create a quiz to find the L.C. M and H. C. F. of numbers. Students also create the answer key.</li> </ul>



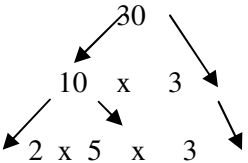
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**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENTS
16. Identify L.C.M and G. C. F. of two numbers.	<p>A factor tree of 20</p> <p><b>Step 1</b> Find any two factors of 20.</p> $\begin{array}{c} 20 \\ \swarrow \quad \searrow \\ 10 \quad \times \quad 2 \end{array}$ <p><b>Step 2</b> Continue factoring until only prime factors are left.</p> $\begin{array}{c} 20 \\ \swarrow \quad \searrow \\ 10 \quad \times \quad 2 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ 2 \quad \times \quad 5 \quad \times \quad 2 \end{array}$			

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>17. Write numbers as products of prime numbers using exponential notation where appropriate.</p>	<ul style="list-style-type: none"> <li>A prime number is a positive whole number that has exactly 2 positive divisors, 1 and the number itself. A prime number cannot be factored. <b>Note: 1 is not a prime number because it has only 1 divisor.</b></li> <li>A composite number has more than two distinct factors (divisors).</li> <li>The product of prime numbers can be represented by the prime factorization method. Example: Write the prime factorization of 60  <math>60 = 2 \times 2 \times 3 \times 5</math>  <math>60 = 2^2 \times 3 \times 5</math></li> <li>You can use a factor tree to find the prime factors of composite numbers. A factor tree of 30</li> </ul> <div style="text-align: center;">  <p>So <math>30 = 2 \times 3 \times 5</math>.</p> </div>	<ul style="list-style-type: none"> <li>Write each number as a product of prime factors using exponential notation where appropriate. 1) 22                      2) 120                      3) 84</li> <li>4) Write the missing factors <math>150 = \_ \times 3 \times 5 \times 5 \_</math></li> <li>Pulley Prime <ul style="list-style-type: none"> <li>a. Use a pulley system to fish three or four prime numbers out of a bucket of water.</li> <li>b. Students will use the prime number they fished to write numbers as products of prime numbers. They will be allowed to discard one number only.</li> <li>c. The student with the greatest number (product) is the winner.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 306 &amp; 307</li> </ul>	<ul style="list-style-type: none"> <li>Students complete a worksheet where they write numbers as products of prime numbers using exponential notation.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>18. Use and interpret the language of Mathematics in problem solving (Continued).</p>	<ul style="list-style-type: none"> <li>• Problem Solving Plan in 4 steps.</li> </ul> <p><b>Step 1: Clues</b></p> <ol style="list-style-type: none"> <li>a. Read the problem carefully</li> <li>b. Underline clue words.</li> <li>c. Ask yourself if you've seen a problem similar to this one. If so, what is similar about it? What did you need to do?</li> <li>d. What facts are you given?</li> <li>e. What do you need to find out?</li> </ol> <p><b>Step 2: Game Plan</b></p> <ol style="list-style-type: none"> <li>a. Define your game plan.</li> <li>b. Have you seen a problem like this before? Identify what you did.</li> <li>c. Define your strategies to solve this problem.</li> <li>d. Try out your strategies. (Using formulas, simplifying, look for a pattern, etc)</li> <li>e. If your strategy does not work, select another strategy.</li> </ol> <p><b>Step 3: Solve</b></p> <ol style="list-style-type: none"> <li>a. Use your strategies to solve the problem.</li> </ol>	<ul style="list-style-type: none"> <li>• Give students problems to solve. They will have to suggest the best strategies, the operation to use, and solve the problems.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://math.about.com/library">http://math.about.com/library</a></li> </ul>	<ul style="list-style-type: none"> <li>• Students create problems and solve them highlighting the clue words and the mathematics language.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 5**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
18. Use and interpret the language of Mathematics in problem solving.	<p><b>Step 4: Reflect</b></p> <p>a. This part is critical. Look over your solution.  b. Does it seem probable?  c. Did you answer the question? Are you sure?  d. Did you answer using the language in the question? Same units?</p> <ul style="list-style-type: none"> <li>• <b>Clue words for addition:</b>  Sum          Total  In all        Perimeter</li> <li>• <b>Clue words for subtraction:</b>  Difference    How much more  Exceed</li> <li>• <b>Clue words for multiplication:</b>  Product      Total  Area          Times</li> <li>• <b>Clue words for division:</b>  Share        Distribute  Quotient    Average</li> </ul>			

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA**  
**GRADE: 5**

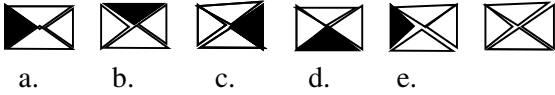
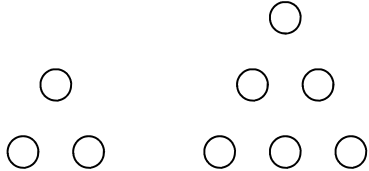
**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationship in data, to solve problems and predict results.

**Essential Questions**

1. What are the different ways to represent the patterns or relationships?
2. Why are variables used?
3. How can writing algebraic formulas help solve problems with one variable?
4. What strategies can be used to solve for unknowns in algebraic equations?
5. When are algebraic and numeric expressions used?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE: 5**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, to solve problems and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Investigate, describe and extend numerical and geometric patterns including: triangular numbers, perfect squares, patterns formed by powers of tens and arithmetic sequences (Continued).</p>	<ul style="list-style-type: none"> <li>• <b>Numerical Patterns: Patterns</b> that are created using numbers. e.g. Division Patterns <math>80 \div 20 = 4</math> <math>800 \div 20 = 40</math> <math>8000 \div 20 = 400</math></li> <li>• <b>Geometric Patterns:</b> Geometric Patterns are patterns that are created using geometrical shapes.</li> </ul> <p>E.g.</p>  <ul style="list-style-type: none"> <li>• <b>Triangular Numbers:</b> A pattern of numbers that can be shown by dots arranged in the shape of a triangle. Some triangular numbers are 1, 3, 6, 10, 15, 21, 28, 36</li> <li>• <b>Perfect square</b> is a number that has a whole number as its square root. The square root of a perfect square is a whole number. For example, 0, 1, 4, 9, 16, 25, etc. are all perfect squares.</li> </ul>	<ul style="list-style-type: none"> <li>• Show a variety of numerical and geometrical patterns. Allow students to: <ul style="list-style-type: none"> <li>a. categorize them as Numerical</li> </ul> or <ul style="list-style-type: none"> <li>Geometrical</li> <li>b. provide explanations.</li> </ul> </li> </ul> <p>Example: Use varied manipulatives to create triangular array.</p> <p>e.g.</p>  <ul style="list-style-type: none"> <li>• Use tangram pieces to create perfect squares.</li> <li>• Create place mats using varied coloured squared pieces.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math 5 pg. 449</li> <li>• <a href="http://www.wiki.answers.com">http://www.wiki.answers.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Journal Entry:</b> Have students write to compare/contrast numerical and geometrical patterns.</li> <li>• Create numerical and geometrical patterns</li> <li>• Create triangular arrays and provide justification.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA**  
**GRADE: 5**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, to solve problems and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
1. Investigate, describe and extend numerical and geometric patterns including: triangular numbers, perfect squares, patterns formed by powers of tens and arithmetic sequences.	<ul style="list-style-type: none"> <li>• Powers of ten are numbers that begin with the digits 1 and 0: 10, 100, 1000...</li> <li>• To multiply a whole number by powers of ten, move the decimal point one place to the right for each power of 10.</li> </ul> <p><b>Example:</b>  <math>1.24 \times 10 = 12.4</math>  <math>1.24 \times 100 = 124</math>  <math>1.24 \times 1000 = 1240</math></p>	<ul style="list-style-type: none"> <li>• Take a field trip to inspect the architecture of churches or other buildings. Have students highlight the areas that have square patterns by:               <ol style="list-style-type: none"> <li>a. taking photos</li> <li>b. recording via writing</li> <li>c. drawing</li> </ol> </li> <li>• Let students create and laminate activity cards or board games. These will require students to complete the patterns with powers of ten.</li> </ul>		<ul style="list-style-type: none"> <li>• Students will compile photo/drawings and write details about patterns.</li> <li>• Complete patterns with powers of ten.</li> </ul>
2. Write simple expressions.	<ul style="list-style-type: none"> <li>• A <b>simple expression</b> involves variables, numbers, and operations.</li> <li>• A <b>variable</b> is a letter or symbol that represents an unknown amount that can change.</li> </ul>	<ul style="list-style-type: none"> <li>• In cooperative groups, give students simple expressions to write. Students explain their answers to the class.                Examples:               <ol style="list-style-type: none"> <li>a. Mary has <math>x</math> dolls. Her friend gave her 2 more. Write an expression.  <math>X + 2</math></li> <li>b. A number of students divided into 2 teams.  <math>A \div 2</math></li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Go Math Bk. 5 pg. 342</li> <li>• enVision Math Bk. 5 pgs. 146 &amp; 147</li> </ul>	<ul style="list-style-type: none"> <li>• Students create stories and write simple equations of the same.</li> <li>• Complete worksheet with simple equations</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA**  
**GRADE: 5**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, to solve problems and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Solve single variable equations. Using concrete objects pictures or number.	<ul style="list-style-type: none"> <li>A variable equation is a mathematical sentence that has a number and a letter or symbol that stands for one or more numbers.</li> </ul> <p><b>Example:</b> <math>7 \times b = 56</math>  <math>b = 8</math></p> <ul style="list-style-type: none"> <li>A variable is a letter that is used in place of a number.</li> </ul>	<ul style="list-style-type: none"> <li>Create equations from given situations. E.g. The reticulated python is the largest snake in the world. At birth it is 2 feet long and some adults are 29 feet long. How much do these pythons grow to reach adult length?</li> </ul> <p style="text-align: center;"><math>2 + f = 29</math></p>	<ul style="list-style-type: none"> <li>Harcourt Math 5 pg.72</li> </ul>	<ul style="list-style-type: none"> <li>Create variable equations and provide solutions.</li> </ul>



**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 5**

**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication.

**Essential Questions**

1. How can estimation help you make a reasonable guess?
2. How is estimating sums with decimals like estimating sums with whole numbers?
3. How can I estimate the answers for operations involving two and three digit numbers?
4. What facts are needed to solve problems?
5. How can I recognize what strategy to use for a specific problem?
6. How do operations affect numbers?
7. Why are compatible numbers used for the dividend when estimating quotients?
8. How can divisibility rules help with division?
9. How are division and multiplication related?
10. How can I explain how changing the size of the whole affects the size or amount of a fraction?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 5**

**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT														
<p>1. Estimate and create answers to solve single and multi-step problems involving addition and subtraction of whole numbers, money, fractions, and decimals (Continued).</p>	<ul style="list-style-type: none"> <li>• <b>Computational estimation</b> is a process of developing an answer or answers that are close enough to enable good decision with making exact computations.</li> <li>• <b>Exact computations</b> can help by building a better sense of estimating answers first.</li> <li>• <b>Front End Estimation</b> This is where you use only the most important digits , ignore the rest. e.g.  <table style="margin-left: 20px;"> <tr> <td style="text-align: right;">\$4.092</td> <td style="text-align: right;">\$4.000</td> </tr> <tr> <td style="text-align: right;">\$7.351</td> <td style="text-align: right;">\$7.000</td> </tr> <tr> <td style="text-align: right;">+ \$8.973</td> <td style="text-align: right;">+ \$8.000</td> </tr> <tr> <td style="text-align: right;">_____</td> <td style="text-align: right;">\$19.00</td> </tr> </table> </li> <li>• <b>Adjusting and compensation</b> Students should be taught that values being analyzed can be seen as a little more, a lot more, or a little less. e.g. Subtraction  <table style="margin-left: 20px;"> <tr> <td style="text-align: right;">\$ 7.351</td> <td style="text-align: right;">- \$7.000</td> </tr> <tr> <td style="text-align: right;">- 4.092</td> <td style="text-align: right;">\$4.000</td> </tr> <tr> <td style="text-align: right;">\$ 3.259</td> <td style="text-align: right;">\$3.000</td> </tr> </table> </li> </ul>	\$4.092	\$4.000	\$7.351	\$7.000	+ \$8.973	+ \$8.000	_____	\$19.00	\$ 7.351	- \$7.000	- 4.092	\$4.000	\$ 3.259	\$3.000	<ul style="list-style-type: none"> <li>• Without calculating an exact answer, circle the best estimate for <math>72 \div 0.025</math> <ol style="list-style-type: none"> <li>A lot less than 72</li> <li>A little less than 72</li> <li>A Little more than 72</li> <li>A lot more than 72</li> </ol> </li> <li>• In pairs, students create single and multi-step problems. Another pair in the class solves the problems. Students report findings.</li> <li>• <b>Do I Have Enough</b> <ol style="list-style-type: none"> <li>Students are exposed to the classroom store where items are clearly priced. Students are given a certain amount of money to shop. For example \$15.00.</li> <li>Students are challenged to select four items that when purchased will leave them with more than \$2.00 or less than a \$1.00.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Helping Children Learn Math Fifth Edition, pg 242</li> <li>• newspapers magazines etc.</li> <li>• Harcourt Math Bk. 4, pgs. 34, 48 &amp; 49, 188 &amp; 189, 191, 201&amp; 202, 258 &amp; 259, 265, 399,515, 579</li> <li>• <a href="http://www.miley.com">http://www.miley.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Worksheet <b>Example:</b> <ol style="list-style-type: none"> <li>Suppose it costs 23¢ to mail a post card to Andros and 37¢ for a letter. Bill wrote to 12 friends and spent \$3.46 for postage. How many letters and how many post cards did he send? You can use guess and check.</li> <li>If two whole numbers have a sum of 18 and a product of 45, what are the numbers?</li> </ol> </li> <li>• Write a paragraph explaining a situation where estimation of addition and subtraction of whole numbers, money, fractions, or decimals was beneficial to you.</li> </ul>
\$4.092	\$4.000																	
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\$ 3.259	\$3.000																	

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 5**

**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Estimate and create answers to solve single and multi-step problems involving addition and subtraction of whole numbers, money, fractions, and decimals.</p>	<ul style="list-style-type: none"> <li>• <b>Student’s question:</b> If each box contains 79 juice containers, about how much will 5 boxes hold? <b>Student A’s response:</b> 4 x 100 but less than 400. <b>Student B’s response:</b> 5 x 70 is 350 but more than 350</li> <li>• <b>Compatible numbers</b> also called friendly numbers. Values are easy to compute mentally and seem to go together. For example, 7 and 3 are compatible with 10; thus 70 and 30 are compatible with 100</li> <li>• 3/7 and 4/7 are compatible in the one whole; thus 30/70 and 40/70 are compatible with one whole.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Do I Have Enough?</b> <ul style="list-style-type: none"> <li>a. Students are given a certain amount of money (e.g.\$10.00) to shop at the classroom store.</li> <li>b. Students are challenged to select exactly four items that will leave them with more than \$2.00 or less than \$1.00.</li> </ul> </li> </ul>		
<p>2. Estimate using several methods including rounding (Continued).</p>	<ul style="list-style-type: none"> <li>• <b>Flexible Rounding:</b> Same rules that are used for rounding numbers. Estimate the result <math display="block">\begin{array}{r} 29 \\ \times 24 \\ \hline \end{array}</math> Students could round 24 to 20 and 29 to 30 <math display="block">20 \times 30 = 600</math></li> </ul>	<ul style="list-style-type: none"> <li>• Allow students to estimate products and justify their responses. For example: 43 x 29; 63 x 46</li> <li>• Students collect and compare daily temperatures for 1 week for four countries in different time zones.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pg. 26</li> <li>• Helping Children Learn Math pgs. 188-191</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the advantages and disadvantages of rounding numbers.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 5**

**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT						
2. Estimate using several methods including rounding.	<ul style="list-style-type: none"> <li>Flexible numbers can be changed or reformulated. Round number that are close and easy to formulate. This is particularly suited for multiplication.</li> <li>Clustering or averaging: When numbers need to be totaled, some times you can find the answer by estimating an average of them e.g. Estimate the total.  <div style="text-align: center;"> <table style="margin: auto;"> <tr> <td style="padding: 0 10px;">52</td> <td style="padding: 0 10px;">60</td> </tr> <tr> <td style="padding: 0 20px;">57</td> <td></td> </tr> <tr> <td style="padding: 0 10px;">67</td> <td style="padding: 0 10px;">64</td> </tr> </table> </div> </li> <li>Now you can take the average and multiply it by how many numbers you have added.</li> </ul>	52	60	57		67	64	<ol style="list-style-type: none"> <li>Students estimate the average weekly temperatures.</li> <li>Students can create a graph of choice to represent the information.</li> </ol> <ul style="list-style-type: none"> <li>Have students estimate how many balloons are needed to fill the classroom. Students explain how they arrived at their answer.</li> </ul>		
52	60									
57										
67	64									
3. Round decimals to the nearest tenth, hundredth and thousandth.	<ul style="list-style-type: none"> <li><b>Rounding whole numbers and rounding decimals are similar processes.</b> To round a decimal to the nearest tenth, first observe the hundredths place. If the number in these places is 4 or less, you drop it and the digit in the tenths place does not change. <b>Example:</b> Round 0.742 to the nearest tenth = 0.7</li> <li>If the number in thousandths places is 5 or more, the number in the tenths place is increased by 1. <b>Example:</b> Round 0.459 to the nearest tenth = 0.5 Round 1.222 to the nearest hundredth. = 1.22 Round 1.2354 to the nearest thousandths. = 1.235 <ul style="list-style-type: none"> <li>Round the number to the far right if the number is more than 4.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Students estimate various sums and differences and explain the method used to get results.</li> <li>Write various numbers on individual sheets. Form layer of sheets into a cabbage ball. <ol style="list-style-type: none"> <li>Toss the cabbage ball to a student. The student peels the bottom layer of the cabbage ball, reads it, and gives the estimation.</li> <li>This is done until all the layers are unfolded.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 458</li> </ul>	<ul style="list-style-type: none"> <li>Complete a riddle activity <b>Example:</b> If you round my decimal number to the nearest tenth, the sum of my digits is 11. What am I? 0.74</li> </ul>						

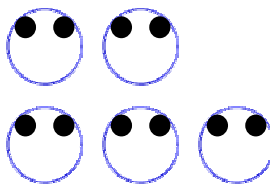
**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 5**

**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
4. Recall basic addition, subtraction, multiplication, and division facts, with a 3 second per fact standard (Continued).	<ul style="list-style-type: none"> <li><b>Addition order property:</b> Changing the order of the addends does not change the sum.  <math display="block">\begin{array}{rcc} 9 + 7 &amp; = &amp; 16 \\ \text{addends} &amp; &amp; \text{sum} \end{array}</math> <math display="block">7 + 9 = 16</math></li> <li><b>Zero property:</b> When you add zero to a number, the sum is that number.  <math>12 + 0 = 12</math>   <math>0 + 25 = 25</math></li> <li><b>Subtraction Facts:</b> Addition and subtraction are related. They are inverse operations. There are 100 basic subtraction facts. These results from the difference between one addend and the sum for all one digit addends.</li> <li><b>Grouping Property of Addition:</b> When you group addends in different ways, the sums are the same.  <math>9 + (15 + 5) = (9 + 15) + 5</math>  <math>9 + 20 = 24 + 5</math>  <math>29 \qquad \qquad \qquad 29</math></li> </ul>	<ul style="list-style-type: none"> <li>Complete the following. <ul style="list-style-type: none"> <li>a. <math>5 + 8 = 13 \leftrightarrow 13 - 5 = \underline{\quad}</math></li> <li>b. <math>9 \times 8 = 72 \leftrightarrow 72 \div 8 = \underline{\quad}</math></li> <li>c. <math>7 \times 6 = 42 \leftrightarrow 6 + 6 + 6 + 6 + 6 + 6 + 6</math></li> <li>d. <math>24 \div 4 \leftrightarrow 24 \underline{\hspace{2cm}}</math></li> </ul> </li> <li><b>Facts Feud</b>  (Students compete as mathematics strand families. For example, computation and measurement, measurement, and the like). <ul style="list-style-type: none"> <li>a. Two contestants meet at the host's desk where they are given a question.</li> <li>b. Students are allowed 3 seconds to answer after buzzing in.  Example of questions: If I shared 309 pennies between 3 people, how many pennies would each child get?</li> <li>c. The team with the most points wins.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>www.miley.com/college</li> <li>Helping Children Learn Maths pgs. 207, 218-222</li> <li>Harcourt Math Bk. 4 pgs. 508-511</li> </ul>	<ul style="list-style-type: none"> <li>Oral Quiz: Students answer questions in three seconds.  Example: <math>9 \times 8 = \underline{\quad}</math>  <math>72 \div 8 = \underline{\quad}</math></li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 5**

**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>4. Recall basic addition subtraction, multiplication and division facts, with a 3 second per fact standard.</p>	<ul style="list-style-type: none"> <li>The basic multiplication facts each involve two one digit factors and their product. There are 100 basic multiplication facts (from <math>0 \times 0</math> to <math>9 \times 9</math>)</li> <li>Multiplication and division are opposite or inverse operations. One operation undoes the other.</li> <li>Basic division facts rely on the inverse relationship of multiplication and division, but there are only 90 basic division facts (there are no facts with zero as the divisor).</li> </ul>			
<p>5. Explain the meaning of multiplication and division in words and /or pictures.</p>	<ul style="list-style-type: none"> <li>Multiplication can be seen as a special case of addition in which all addends are equal size.</li> <li>Division is the inverse of multiplication; that is, in a division problem you are seeking an unknown factor when the product and some other factor are known.</li> </ul>	<ul style="list-style-type: none"> <li>Use apples and oranges to display fact families where students explain the meaning of multiplication and division.</li> </ul>  <p style="text-align: center;"><math>5 \times 2 = 10 ; 10 \div 5 = 2</math></p>	<ul style="list-style-type: none"> <li>Helping Children Learn Maths pgs. 207, 218-222</li> <li>Mathematics for Elementary Teachers pgs. 120 &amp; 121</li> </ul>	<ul style="list-style-type: none"> <li>Construct a picture sentence to explain the following: <ul style="list-style-type: none"> <li>a. Why is <math>7 \times \underline{\quad} = 91</math></li> <li>b. Why is <math>150 \div \underline{\quad} = 20</math></li> </ul> </li> </ul>

**SCOPE OF WORK  
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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>6. Multiply up to 2 digits by 3 digits.</p>	<ul style="list-style-type: none"> <li>The procedure for multiplying by two or three digits number is an extension of multiplying by a one-digit number. Use arrays and grids to bridge concrete and symbolic.</li> </ul> <p><b>Examples</b></p> <p><b>A.</b></p> $\begin{array}{r} 29 \\ \times 38 \\ \hline 232 \\ 870 \leftarrow \\ \hline 1002 \leftarrow \end{array} \quad \begin{array}{l} 8 \times 29 \\ 30 \times 29 \end{array}$ <p><b>B.</b></p> $\begin{array}{r} 372 \\ \times 28 \\ \hline 16 \\ 560 \\ 2400 \\ 40 \\ 1400 \\ 6000 \\ \hline 10416 \end{array} \quad \begin{array}{l} (8 \times 2) \\ (8 \times 70) \\ (8 \times 300) \\ (20 \times 2) \\ (20 \times 70) \\ (20 \times 300) \end{array}$	<ul style="list-style-type: none"> <li>Complete activity based on Atlantis' staff schedule.               <ol style="list-style-type: none"> <li>Students from each group select a card from a bag.</li> <li>Each group begins solving the question at the same time.</li> <li>The group with the most questions correct wins.</li> </ol> </li> </ul> <p>Example of question: There are 64 workers at Ocean Club Restaurant. If the shift averages 40 hours a week, how many hours do they work for the week.</p>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 222-228</li> <li>Harcourt Math Bk. 4. pgs. 266 &amp; 267</li> <li>Helping Children Learning Math pgs. 272 &amp; 273</li> </ul>	<ul style="list-style-type: none"> <li>Write three word problems that require multiplication up to 2 digits by 3 digits. Example: Mary, Johnny, and Liz represent a different number. If the product is 540, what are their values? (20 x 3 x 9)</li> </ul>

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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
7. Identify and apply different forms of division.	<ul style="list-style-type: none"> <li>Division algorithms can take on different forms.</li> </ul> <p><b>Examples</b></p> <p>a. <math>10 \div 2 = 5</math>    b. <math>5 \overline{) 10}</math></p> <p>c. <math>10/2 = 5</math>    d. <math>1/5</math> of <math>10 = 2</math></p>	<ul style="list-style-type: none"> <li><b>Grab Bag Division</b></li> </ul> <p>a. Students select different parts of an algorithm from a bag. Example 20 , 2, 10.</p> <p>b. Students will select until they have formulated a correct algorithm. Example <math>20 \div 2 = 10</math></p> <p>c. Students who complete correct connection in the shortest time win the game.</p>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4. pgs. 250-255</li> </ul>	<ul style="list-style-type: none"> <li>Students solve word problems using the different forms of division.</li> </ul>
8. Divide up to 4 digit dividends by 2-digit divisor without and with remainders (long and short method-Continued).	<ul style="list-style-type: none"> <li><b>Division:</b> This is the most difficult algorithm for children to learn! This two-digit division proceeds through stages from concrete to abstract, paralleling the work with one-digit divisors.</li> </ul> <p><b>Examples:</b></p> <p>(a) <math>365 \div 27</math> or</p> $\begin{array}{r} \phantom{0} \\ 27 \overline{) 365} \end{array}$ <p>Estimate to place the first digit in the quotient. Think</p> $\begin{array}{r} \phantom{0} \\ 30 \overline{) 400} \end{array}$ <p>Place the first digit in the tens place and divide 40 terms. Write a 1 in the terms place in the quotient.</p>	<ul style="list-style-type: none"> <li>In groups, students solve division problems by dividing 4 digits by 2 digit divisors with and without remainders.</li> </ul> <p>a. Students explain how they arrived at their answers.</p> <ul style="list-style-type: none"> <li>Students create a poem, song, skit, or rap concerning dividing 4 digits by 2-digit divisor, with and without remainders.</li> </ul>	<ul style="list-style-type: none"> <li>Helping Children Learn Maths pgs. 272-273</li> <li>Harcourt Math Bk. 4 pgs. 266-267</li> </ul>	<ul style="list-style-type: none"> <li>Written quiz on dividing 4 digits by 2-digit divisor, with and without remainders.</li> </ul>



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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>8. Divide up to 4 digit dividends by 2-digit divisor without and with remainders (long and short method- Continued).</p>	<p>(b) <math>\begin{array}{r} \underline{400} \\ 20)8000 \end{array}</math>      <math>\begin{array}{r} \underline{440} \\ 20)8800 \end{array}</math></p> <p><b>Long Division</b>  <b>A.</b></p> $\begin{array}{r} \underline{1} \\ 27 \overline{) 365} \\ \underline{-27} \phantom{0} \\ 95 \end{array}$ <p>Multiply 27 x 1  Subtract 36 - 27  Compare 9 &lt; 27</p> <p>(c) Bring down the 5 ones. Divide the 95 ones by 27.</p> $\begin{array}{r} \phantom{27} \overline{) 365} \\ \phantom{27} \underline{-27} \phantom{0} \\ \phantom{27} 95 \phantom{0} \\ \phantom{27} \underline{-81} \phantom{0} \\ \phantom{27} 14 \phantom{0} \end{array}$ <p><b>B.</b> 18 )8894</p> <p><b>Step 1:</b> Divide the digit in the ten thousands place</p>			

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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
8. Divide up to 4 digit dividends by 2-digit divisor without and with remainders (long and short method- Continued).	<p><b>Step 2:</b> Divide 88 hundred. Write a 4 in the tens place in the quotient.</p> $\begin{array}{r} \underline{4} \\ 18 \overline{)8894} \end{array}$ <p>Multiply <math>18 \times 4</math>            Subtract <math>88 - 72</math>            Compare <math>16 &lt; 18</math></p> <p><b>Step 3</b>            Bring down the 9 tens. Divide the 169 ones.</p> $\begin{array}{r} \underline{494} \\ 18 \overline{)8894} \\ \underline{-72} \phantom{0} \\ -169 \phantom{0} \\ \underline{162} \phantom{0} \\ 74 \phantom{0} \\ \underline{-72} \phantom{0} \end{array}$ <p>Multiply <math>18 \times 9</math>            Subtract <math>169 - 162</math>            Compare <math>7 &lt; 18</math></p> <p><b>Step 4</b>            Bring down 4 ones</p> $\begin{array}{r} \underline{494r2} \\ 18 \overline{)8894} \\ \underline{72} \phantom{0} \\ 169 \phantom{0} \\ \underline{162} \phantom{0} \\ 74 \phantom{0} \\ \underline{72} \phantom{0} \\ 2 \phantom{0} \end{array}$ <p>Multiply <math>18 \times 4</math>            Subtract <math>74 - 72</math>            Compare <math>2 &lt; 18</math></p>			

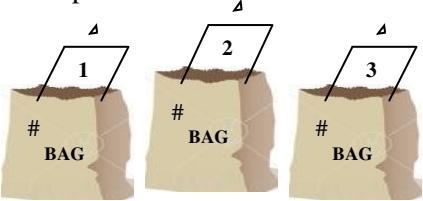
**SCOPE OF WORK  
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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
8. Divide up to 4 digit dividends by 2 digit divisor without and with reminders (long and short method).	<ul style="list-style-type: none"> <li>• <b>Ensure that the remainder does not exceed the divisor.</b></li> <li>• The use of calculators should be aligned with the activities. The calculator is used to strengthen the grasp of the relationship between numbers.</li> <li>• Allow students to divide using objects that are familiar to them. For example guineps, plums etc.</li> </ul>			
9. Use divisibility rules for 2, 3, 5, 10 (Continued).	<ul style="list-style-type: none"> <li>• Divisibility means ‘no remainder after division’.</li> <li>• When to use the rule of divisibility:</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Grab Bag</b> <ol style="list-style-type: none"> <li>a. Place students in groups and give each group 6 grab bags.</li> <li>b. Give each group 2 minutes to correctly match facts on the cards within the grab bags.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pg. 313</li> </ul>	<ul style="list-style-type: none"> <li>• Activity sheet on divisibility</li> </ul>

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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT												
9. Use divisibility rules for 2, 3, 5, 10.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Number</th> <th>Rule</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2</td> <td>Even numbers are divisible by 2</td> </tr> <tr> <td style="text-align: center;">3</td> <td>If the sum of the digit is divisible by 3, then the number is divisible by 3.</td> </tr> <tr> <td style="text-align: center;">5</td> <td>If the last digit is a 5 or 0, the number is divided by 5.</td> </tr> <tr> <td style="text-align: center;">9</td> <td>If the sum of the digits is divisible by 9, then the number is divisible by 9</td> </tr> <tr> <td style="text-align: center;">10</td> <td>If the last digit is 0, the number is divisible by 10.</td> </tr> </tbody> </table> <p><b>Example</b>            5 766;  <b>Strategy:</b> Add the digits  <math>5\ 766 \rightarrow 5 + 7 + 6 + 6 = 24</math>  <b>Ask:</b> Is 24 divisible by 3? If yes, so is 5 766.</p>	Number	Rule	2	Even numbers are divisible by 2	3	If the sum of the digit is divisible by 3, then the number is divisible by 3.	5	If the last digit is a 5 or 0, the number is divided by 5.	9	If the sum of the digits is divisible by 9, then the number is divisible by 9	10	If the last digit is 0, the number is divisible by 10.	<ul style="list-style-type: none"> <li>• <b>Grab Bag</b></li> <li>c. Place students in groups and give each group 6 grab bags.</li> <li>d. Give each group 2 minutes to correctly match facts on the cards within the grab bags.</li> <li>e. Students explain their answers to the class.</li> </ul> <p>Example:</p> <div style="text-align: center;">  <p style="margin: 0;">495      Divisible by 5      30 + 6</p> </div> <p><b>Bags 1 and 2 are compatible.</b></p>		
Number	Rule															
2	Even numbers are divisible by 2															
3	If the sum of the digit is divisible by 3, then the number is divisible by 3.															
5	If the last digit is a 5 or 0, the number is divided by 5.															
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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																																														
<p>10. Multiply and divided by multiples and powers of 10 as a mental arithmetic strategy.</p>	<ul style="list-style-type: none"> <li>Use basic facts and patterns to find quotients mentally. Example: find <math>1.800 \div 3</math></li> </ul> <table style="margin-left: 20px;"> <tr> <td style="text-align: right;"><b>Dividend</b></td> <td style="text-align: center;"><b>divisor</b></td> <td style="text-align: center;"><b>=</b></td> <td style="text-align: left;"><b>quotient</b></td> </tr> <tr> <td>21</td> <td style="text-align: center;">3</td> <td style="text-align: center;">=</td> <td>7</td> </tr> <tr> <td>210</td> <td style="text-align: center;">3</td> <td style="text-align: center;">=</td> <td>70</td> </tr> <tr> <td>2100</td> <td style="text-align: center;">3</td> <td style="text-align: center;">=</td> <td>700</td> </tr> <tr> <td style="text-align: center;">↑↑</td> <td></td> <td></td> <td style="text-align: center;">↑↑</td> </tr> <tr> <td>two zeros</td> <td></td> <td></td> <td>two zeros</td> </tr> </table> <ul style="list-style-type: none"> <li>Basic facts and patterns can be used to help you find products mentally. If you want to find the total number of pennies in 7 rolls of pennies with each roll having 50 pennies</li> </ul> <p><b>50 Think</b></p> <table style="margin-left: 20px;"> <tr> <td style="text-align: right;"><u>x7</u></td> <td>50 = 5 x 10, or 5 tens</td> </tr> <tr> <td style="text-align: right;">350</td> <td>7 x 5 tens = 35 tens</td> </tr> <tr> <td></td> <td>35 tens = 35 x10 or 350</td> </tr> </table> <p><b>Examples</b></p> <p>7 x 20 = 140  7 x 200 = 1,400  7 x 2,000 = 14,000</p> <p>As the number of zeros in a factor increases, the number of zero in the product increases</p>	<b>Dividend</b>	<b>divisor</b>	<b>=</b>	<b>quotient</b>	21	3	=	7	210	3	=	70	2100	3	=	700	↑↑			↑↑	two zeros			two zeros	<u>x7</u>	50 = 5 x 10, or 5 tens	350	7 x 5 tens = 35 tens		35 tens = 35 x10 or 350	<ul style="list-style-type: none"> <li><b>Read My Mind</b> <ol style="list-style-type: none"> <li>Teacher places a card into a hat and gives two facts about it. Example: My quotient is 27 and my dividend is 2700, what is my divisor?</li> <li>Selected students will give answers within 10 seconds.</li> </ol> </li> <li>Determine the missing values</li> </ul> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Dividend</th> <th>Divisor</th> <th>Quotient</th> <th>Remainder</th> </tr> </thead> <tbody> <tr> <td>7 200</td> <td>8</td> <td>?</td> <td>?</td> </tr> <tr> <td>732</td> <td>29</td> <td>?</td> <td>?</td> </tr> <tr> <td>?</td> <td>34</td> <td>?</td> <td>20</td> </tr> </tbody> </table>	Dividend	Divisor	Quotient	Remainder	7 200	8	?	?	732	29	?	?	?	34	?	20	<ul style="list-style-type: none"> <li>Mathematics for Elementary Teachers pg. 329</li> <li>Harcourt Math Bk. 4 pgs. H16, 282 &amp; 283</li> </ul>	<ul style="list-style-type: none"> <li>Students write two problems that can be solved mentally using division or multiplication by powers of 10. Students explain answers to their classmates.</li> </ul>
<b>Dividend</b>	<b>divisor</b>	<b>=</b>	<b>quotient</b>																																															
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**SCOPE OF WORK**  
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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
11. Check answers to multiplication and division problems using inverse operations.	<ul style="list-style-type: none"> <li>Multiplication and division are inverse operations or opposite to each other.  <b>Example:</b>  <math>4 \times 6 = 24 \leftrightarrow 24 \div 4 = 6</math></li> <li>A set of related multiplication and division equations using the same numbers is a fact family.  <b>Example:</b>  <math>9 \times 4 = 36 \quad 36 \div 4 = 9</math>  <math>4 \times 9 = 36 \quad 36 \div 9 = 4</math></li> </ul>	<ul style="list-style-type: none"> <li><b>Inverse Moment</b> <ol style="list-style-type: none"> <li>Students are placed into two groups. One group gives a multiplication sentence while the other group gives the division inverse in less than 5 seconds</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg.140</li> <li>Helping Children Learn Maths pg. 200</li> </ul>	<ul style="list-style-type: none"> <li>Explain how to use multiplication to solve a division problem and give an example.</li> </ul>
12. Apply the rules of order of operations	<ul style="list-style-type: none"> <li>When evaluating expressions with more than one operation, you need to know which operation to do first.</li> <li>Order of operations is used to solve expressions with more than one operation.</li> <li>Steps to consider:               <ol style="list-style-type: none"> <li>First, operate inside the parentheses.</li> <li>Next, multiply and divide from left to right.</li> <li>Then, add and subtract from left to right.</li> </ol> <b>Example</b>  <math>3(9 + 7) \div 2</math>  <math>3 \times 16 \div 2</math>  <math>48 \div 2 = 24</math> </li> </ul>	<ul style="list-style-type: none"> <li><b>What's the Error?</b> <ol style="list-style-type: none"> <li>Students are given expressions where they identify and correct error(s) spotted.                Example: <math>8 + 12 \div 2 - 4 = 6</math></li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pg. 88</li> </ul>	<ul style="list-style-type: none"> <li>Complete Practice and Problem Solving activity on page 89 of Harcourt Math.</li> </ul>

**SCOPE OF WORK  
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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four basic operations of addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>13. Add and subtract fractions and mixed numbers, with and without regrouping and express answers in simplest terms. (Like and unlike denominators)-Continued</p>	<ul style="list-style-type: none"> <li>Adding and subtracting fractions can solve problems similar to those with whole numbers.</li> </ul> <p><b>Example:</b> <math>2/10 + 6/10 = 8/10</math></p> <p>a. Write the sum in the simplest form <math>8/10 = 4/5</math></p> <p>b. Regrouping (model)</p> <p style="text-align: center;">● ● ● ● ● ● ⊕</p> <p style="text-align: center;"><math>6 \frac{3}{7}</math> is 6 wholes plus <math>3/7</math></p> <p style="text-align: center;">● ● ● ● ● ⊕ ⊕</p> <p style="text-align: center;"><math>6/37</math> is 5 wholes plus <math>7/7</math> plus <math>3/7</math> or <math>5 \frac{10}{7}</math></p> <ul style="list-style-type: none"> <li>Children must be encouraged to give reasonable answer. They must be helped to see why a common denomination is necessary when adding on subtracting fractions.</li> <li>Subtraction with mixed numbers.</li> </ul>			

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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
13. Add and subtract fractions and mixed numbers, with and without regrouping and express answers in simplest terms. (Like and unlike denominator)	$3 \frac{5}{8} - 2 \frac{1}{8}$ <b>Step 1:</b> Subtract the fraction first $\begin{array}{r} 3 \frac{5}{8} \\ - 2 \frac{1}{8} \\ \hline 1 \frac{4}{8} \\ 1 \frac{1}{2} \end{array}$ <b>Step 2:</b> Subtract the whole numbers $\begin{array}{r} 3 \frac{5}{8} \\ - 2 \frac{1}{8} \\ \hline 1 \frac{4}{8} \\ 1 \frac{1}{2} \end{array}$	<ul style="list-style-type: none"> <li>What's the Question?  a. In cooperative groups, students are given statements about mixed numbers where they find the questions and justify their responses.  <b>Example:</b> Two mixed numbers are <math>1 \frac{1}{4}</math> and <math>2 \frac{1}{4}</math>. The answer is <math>3 \frac{1}{2}</math></li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 392-395</li> </ul>	<ul style="list-style-type: none"> <li>Quiz : Students add and subtract fractions and mixed numbers with and without regrouping.</li> </ul>
14. Solve problems involving the addition and subtracting of decimals, using paper and pencil (Continued).	<ul style="list-style-type: none"> <li>Add or subtract like units (tens with tens, hundredths with hundred thousand so forth).</li> <li>Regroup in the decimal places as they did with whole numbers.</li> <li>Use paper and pencil to work out everyday problems based on the topic.</li> <li><b>What is the error?</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Mixed and Match</b>  a. A set of students are given flash cards with addition and subtraction problems. Another group of students are given the solutions of their problems.  b. Students with the problem flash cards hold them up and work the solutions. The students with the solution cards also work the problems.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 432-439</li> <li>Mathematics for Elementary Teachers pgs. 339-340</li> </ul>	<ul style="list-style-type: none"> <li>Students solve given problems.  <b>Example:</b> Heavenn ran 1.753 miles on Tuesday as well as on Wednesday. She ran 1.45 miles on Wednesday and Friday. How far did Heavenn run altogether?  <math>1.753 \times 2 = 3.506</math>  <math>3.506 + 1.45 = 4.956</math> miles</li> </ul>



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**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT														
14. Solve problems involving the addition and subtraction of decimals, using paper and pencil.	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">a bag of plums</td> <td style="text-align: right;">\$ 2.69</td> </tr> <tr> <td>½ dozen eggs</td> <td style="text-align: right;">\$ 1.69</td> </tr> <tr> <td>jar of guava jam</td> <td style="text-align: right;"><u>\$ 2.93.</u></td> </tr> <tr> <td><b>Answer</b></td> <td style="text-align: right;"><b>\$ 7.21</b></td> </tr> </table> <p>Explain his error and write the correct answer. <b>The student added correctly but left out the decimal point.</b></p>	a bag of plums	\$ 2.69	½ dozen eggs	\$ 1.69	jar of guava jam	<u>\$ 2.93.</u>	<b>Answer</b>	<b>\$ 7.21</b>	c. Teacher says, “Mix and Match”. The students find their partner with the correct response.								
a bag of plums	\$ 2.69																	
½ dozen eggs	\$ 1.69																	
jar of guava jam	<u>\$ 2.93.</u>																	
<b>Answer</b>	<b>\$ 7.21</b>																	
15. Solve whole numbers, decimals, and money computation problems in addition and subtraction with and without regrouping.	<ul style="list-style-type: none"> <li>Remember to expose students to key words that will help in identifying operations.</li> </ul> <p><b>Example</b></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="background-color: #cccccc;">Addition</th> <th style="background-color: #cccccc;">Subtraction</th> </tr> </thead> <tbody> <tr> <td>increased by</td> <td>decreased by</td> </tr> <tr> <td>more than</td> <td>minus, less</td> </tr> <tr> <td>combined, together</td> <td>difference between/of</td> </tr> <tr> <td>total of</td> <td>less than, fewer than</td> </tr> <tr> <td>sum</td> <td></td> </tr> <tr> <td>added to</td> <td></td> </tr> </tbody> </table>	Addition	Subtraction	increased by	decreased by	more than	minus, less	combined, together	difference between/of	total of	less than, fewer than	sum		added to		<ul style="list-style-type: none"> <li>Students are divided into groups where they solve different problems. Group leaders report on findings.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 46 &amp; 47</li> </ul>	<ul style="list-style-type: none"> <li>Students complete activity sheet with addition and subtraction with and without regrouping.</li> </ul>
Addition	Subtraction																	
increased by	decreased by																	
more than	minus, less																	
combined, together	difference between/of																	
total of	less than, fewer than																	
sum																		
added to																		

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 5**

**Sub-Goal 3:** Estimate and understand the meaning, use and connection between the four (4) basic operations; addition, subtraction, division, and multiplication

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT										
15. Solve whole numbers, decimals, and money computation problems in addition and subtraction with and without regrouping.	<ul style="list-style-type: none"> <li>• <b>To challenge students, use problems that involve multiplication and division.</b></li> </ul> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Multiplication</th> <th style="text-align: left;">Division</th> </tr> </thead> <tbody> <tr> <td>of</td> <td>per, a</td> </tr> <tr> <td>times, multiplied by</td> <td>out of</td> </tr> <tr> <td>product of</td> <td>ratio of, quotient of</td> </tr> <tr> <td>increased/decreased by a factor of (this type can involve both addition or subtraction <i>and</i> multiplication!)</td> <td>percent (divide by 100)</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• <b>Equal:</b> is, are, was, were, will be, gives, yields, sold for</li> <li>• Encourage students to read the content to determine the plan of problems.</li> </ul>	Multiplication	Division	of	per, a	times, multiplied by	out of	product of	ratio of, quotient of	increased/decreased by a factor of (this type can involve both addition or subtraction <i>and</i> multiplication!)	percent (divide by 100)		<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs. 46 &amp; 47</li> </ul>	
Multiplication	Division													
of	per, a													
times, multiplied by	out of													
product of	ratio of, quotient of													
increased/decreased by a factor of (this type can involve both addition or subtraction <i>and</i> multiplication!)	percent (divide by 100)													

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 5**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy

**Essential Questions**

1. How do I estimate and measure?
2. How are the units of measure within a standard system related?
3. How do you decide which unit of measurement to use?
4. What is the difference between perimeter and area? How do you calculate them?
5. How can measurements be used to solve problems?
6. How can measurement strategies help us in geometrical situations?
7. How do you calculate volume of given dimensions? How can you use volume in every day life?
8. Why is conversion of units important in every day life?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 5**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Estimate and measure length using metric units- kilometre, metre, decimetre, centimeter, and millimeter (Continued)..</p>	<ul style="list-style-type: none"> <li>• A <b>Kilometre (km)</b> is about the length of 10 football fields</li> <li>• A <b>metre (m)</b> is about the distance from one hand to the other when you stretch them out.</li> <li>• A <b>decimetre (dm)</b> is about the width of an adult’s hand.</li> <li>• A <b>centimetre (cm)</b> is about the width of your index finger.</li> <li>• A <b>millimetre</b> is one thousandth (1/1000) of a metre.</li> <li>• Students can use reasonable measure of units when measuring objects without the correct tools.</li> </ul> <p><b>Metric</b>  1cm =10 mm  1dm =10 cm  1m =10 dm  1 m = 100 cm</p>	<ul style="list-style-type: none"> <li>• Students : <ul style="list-style-type: none"> <li>a. estimate and record lengths of objects.</li> <li>b. use a centimetre ruler or metre stick to measure items.</li> <li>c. record actual measurements.</li> <li>d. Compare estimated and actual measurements.</li> </ul> </li> <li>• Use a metre stick to model decimal numbers. The metre shows the whole number. The decimeters and centimetres are fractional parts of the metre.</li> <li>• <b>Metric Scavenger Hunt:</b> <ul style="list-style-type: none"> <li>a. Print the activity sheets for each pair of students.</li> </ul> <p>Examples of items on the sheets</p> <ul style="list-style-type: none"> <li>- Find an object that is 5cm in length.</li> <li>- Find an object that is 4dm in length..</li> <li>- Find an object that is 7 mm in length.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4, pgs. 470-473 <ul style="list-style-type: none"> <li>a. Challenge pg. 241</li> <li>b. Set A Transparency pg. 241</li> <li>c. Math jingles CD 3-4</li> </ul> </li> <li>• Helping Children Learn Mathematics pg. 390</li> <li>• www.emints.org</li> <li>• centimetre ruler</li> <li>• metre stick.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare a News Brief Report to explain how to estimate the length of an object in order to determine the correct unit of measure to use. Students record information on cassette tape.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 5**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																								
1. Estimate and measure length using metric units- kilometre, metre, decimetre, centimeter, and millimetre.	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Prefix</th> <th>Kilo</th> <th>hect</th> <th>deka</th> <th>base</th> <th>deci</th> <th>centi</th> <th>milli</th> </tr> </thead> <tbody> <tr> <td>Symbol</td> <td>k</td> <td>h</td> <td>dk</td> <td></td> <td>d</td> <td>c</td> <td>m</td> </tr> <tr> <td>Measure</td> <td>1000</td> <td>100</td> <td>10</td> <td></td> <td>1/10</td> <td>1/100</td> <td>1/10000</td> </tr> </tbody> </table>	Prefix	Kilo	hect	deka	base	deci	centi	milli	Symbol	k	h	dk		d	c	m	Measure	1000	100	10		1/10	1/100	1/10000	<p>b. Have students cut out the Find Me Cards and place them face down in a stack.</p> <p><b>Game Rules</b></p> <p>a. The first player draws a card and tries to find an object with the same length.</p> <p>b. His or her partner measures the object, records its actual length, and finds the difference between the two measurements.</p> <p>c. After recording the measurements in the chart, the second player draws a card.</p> <p>d. The game continues until all cards have been drawn.</p>		
Prefix	Kilo	hect	deka	base	deci	centi	milli																					
Symbol	k	h	dk		d	c	m																					
Measure	1000	100	10		1/10	1/100	1/10000																					









**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 5**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Express metric measure using decimals.	<ul style="list-style-type: none"> <li>You can use a meter stick to model decimal numbers.</li> <li>The decimeter and centimeter are fractional parts of the meter. Meter (m)                      1.0 meter</li> <li><b>Deci</b> means tenth. Decimeter = 0.1 or 1/10, meter</li> <li><b>Centimeter</b> means hundredth. 1 centimeter = 0.01 or 1/100 Example: <b>Write</b> 3.26 meter as meters + decimeters + centimeter Answer: 3 meters + 2 decimeters + 6 centimeters</li> </ul>	<ul style="list-style-type: none"> <li><b>Complete the following in groups.</b> <ol style="list-style-type: none"> <li><math>4/10 \text{ m} = \_\_ \text{ dm}</math></li> <li>Write in expanded form               <ol style="list-style-type: none"> <li><math>5.49 \text{ m} = \_\_ \text{ m} + \_\_ \text{ dm} + \_\_ \text{ cm}</math></li> <li><math>17.84 \text{ m} = \_\_ \text{ m} + \_\_ \text{ dm} + \_\_ \text{ cm}</math></li> </ol> </li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.4. pg. 473</li> <li>Thinkers Corner Sheet pg. 473</li> <li>Reading Strategy Chart</li> </ul>	<ul style="list-style-type: none"> <li>Complete the KWL Chart           <ol style="list-style-type: none"> <li>what I know</li> <li>what I learned</li> <li>what I want to know</li> </ol> </li> <li>Test: Have students' complete items such as 6 cm and 4 mm can be written in decimal form as _____.</li> </ul>
3. Create and solve problems involving linear measure (Continued).	<ul style="list-style-type: none"> <li>Length is a linear measure.</li> <li>The decimeter is a larger unit than a centimeter.</li> <li>When you change larger units to smaller units, you multiply.</li> </ul>	<ul style="list-style-type: none"> <li><b>Sorting</b> <ol style="list-style-type: none"> <li>Place a box of long thin objects in each group.</li> <li>Have students sort objects (compare lengths of physical objects directly).</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Helping Children Learn Mathematics pg. 395</li> <li>Harcourt Math Bk. 4 pgs. 480 &amp; 481.</li> </ul>	<ul style="list-style-type: none"> <li>Quiz Example: If Mark covers <math>\frac{3}{4}</math> of a meter every step he takes and his sister covers <math>\frac{1}{2}</math> of meter every step she takes. How many meters would each have traveled after ten steps?</li> </ul>

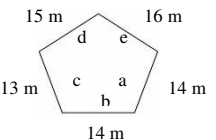
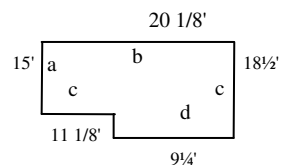
**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 5**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>3. Create and solve problems involving linear measure.</p>	<p><b>Example:</b> In five hours, a mole can dig a tunnel 500 decimeters long. How many centimeters long would the tunnel be?</p> <p style="text-align: center;">1 decimeter in tunnel centimeters</p> $\begin{array}{ccccccc} & & & & & & \\ & & & & & & \\ \downarrow & & & & & & \\ 500 & \times & 10 & = & 5,000 & & \end{array}$ <p>Think 500 dm = __ cm</p> <p>So the tunnel would be 5,000 centimeters long.</p> <ul style="list-style-type: none"> <li>When you change smaller to larger units, you divide.</li> </ul>	<p>c. Choose one object to be the reference and compare the other objects to that one putting the objects on the sheets marked shorter, same or longer (use objects used in science) to include perimeter.</p> <p><b>Shorter</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> chalk</div> <div style="text-align: center;"> paper clip</div> <div style="text-align: center;"> duster</div> </div> <p><b>Same</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> straw</div> <div style="text-align: center;"> pencil</div> <div style="text-align: center;"> tube</div> </div> <p><b>Longer</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> ruler</div> <div style="text-align: center;"> thongs</div> </div>		

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 5**

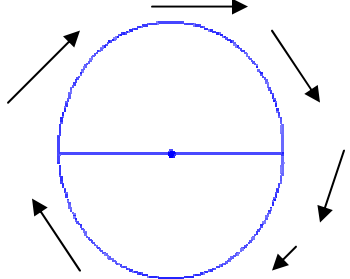
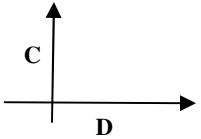
**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>4. Estimate and measure perimeter of objects.</p>	<ul style="list-style-type: none"> <li>The perimeter is the distance around an object. You can use a formula, or mathematical rule, to find the perimeter.</li> </ul> <p><b>E.g.</b> a perimeter formula for a pentagon is:  <math>P = a + b + c + d + e</math> the length of each side is represented by a variable.</p> <ul style="list-style-type: none"> <li>Estimating is the mental process of arriving at a measurement without the aid of measuring instruments.</li> <li>One strategy in estimating measurement is comparing a referent. If you know the perimeter of a student desk, then you can estimate the perimeter of two students' desk.</li> </ul> <p>Find the perimeter</p>  <p>Perimeter = <math>a + b + c + d + e</math>  <math>P = 14m + 17m + 13m + 15m + 16m</math>  <math>P = 75m</math></p>	<ul style="list-style-type: none"> <li>Give students many examples of squares and rectangles to find the perimeter. Discuss, "has anyone found a short cut to calculating the perimeter of a rectangle or a square?"</li> <li>Measure and record the perimeter of certain areas in their school.</li> </ul> <p><b>E.g.</b> Office</p>  <p><math>P = a + b + c + d + e</math>  <math>P = 15' + 20 \frac{1}{8} + 18 \frac{1}{2} + 9 \frac{1}{4} + 11 \frac{1}{8}</math>  <math>P = 74'</math></p>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4, pgs. 490 &amp; 492</li> <li>a. Reteach practice, problems 4</li> <li>b. Solving, challenge 25.2 worksheets.</li> <li>c. Extra practice p.456, set A</li> <li>d. Transparency 25.2</li> <li>e. Number Heroes</li> <li>f. Math jingles 3-4 pg 48 A</li> <li>h. Harcourt intervention card enrichment book pgs. 49 &amp; 50</li> <li>i. Intervention Strategies and Activities Teaching.</li> </ul> <ul style="list-style-type: none"> <li><a href="http://www.harcourtschool.com/elab">http://www.harcourtschool.com/elab</a></li> </ul>	<ul style="list-style-type: none"> <li>Write a journal entry to explain why the playfield has a larger perimeter than the classroom.</li> <li>Complete activity sheet finding the perimeter of various figures.</li> </ul>



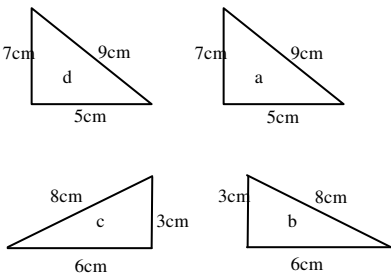
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 5**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																								
5. Relate linear measure using multiples and submultiples of the metre.	<ul style="list-style-type: none"> <li>You can compare centimeters to meters.</li> <li>100 centimeters make a meter. Example <math>350 \text{ cm} = \text{---m}</math> Divide 350 cm by 100 to convert it to meters: <math>350 \div 100 = 3.50</math> (Move the decimal point two places to the left.).</li> </ul>	<ul style="list-style-type: none"> <li>Estimate and measure the length of 5 objects in your classroom to the nearest centimeter and decimeters.</li> <li>Record estimation in a table.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Object</th> <th>Unit of measure</th> <th>Estimate</th> <th>Measurement</th> <th>Conversion</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>cm</td> <td></td> <td></td> <td>dm</td> </tr> <tr> <td>2</td> <td></td> <td>m</td> <td></td> <td></td> <td>mm</td> </tr> <tr> <td>3</td> <td></td> <td>km</td> <td></td> <td></td> <td>m</td> </tr> </tbody> </table> <p style="text-align: center;"><math>0.51\text{m} \text{ ---m} + \text{---dm} + \text{---cm} = \text{---}</math></p>		Object	Unit of measure	Estimate	Measurement	Conversion	1		cm			dm	2		m			mm	3		km			m	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4, pg 474               <ol style="list-style-type: none"> <li>Reteach 24.1</li> <li>Problem Solving 24.1</li> </ol> </li> </ul>	<p><b>Quiz</b> Write <math>&lt;</math>, <math>&gt;</math>, or <math>=</math> to complete the following. e.g.</p> <ul style="list-style-type: none"> <li><math>5 \text{ m} \text{ ---} 3 \text{ cm} \text{ ---} 30 \text{ mm}</math></li> </ul>
	Object	Unit of measure	Estimate	Measurement	Conversion																							
1		cm			dm																							
2		m			mm																							
3		km			m																							
6. Identify and describe the circumference of a circle (Continued).	<p>The circumference of a circle is the measure of the distance around the circle or its perimeter.</p> <p>Circumference</p> 	<p><b>Finding diameters and circumferences</b></p> <ul style="list-style-type: none"> <li>Place students in cooperative groups. Rotate the roles in each group. For example, one student measures, one records the data and one computes the ratio. Each child measures at least one circle depending on time.</li> <li>Use tape measure, string, graph, paper, and circular objects to construct three different size circles.</li> <li>Measure the circumference and diameter of the three circles and determine the ratio between them.</li> <li>Have students make a table.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4, pg. 344</li> <li>Harcourt Math Bk. 5 pgs. 34 -35               <ol style="list-style-type: none"> <li>Problem solving 18.4</li> <li>Math Jingles CD 3-4</li> </ol> </li> <li>Track 2               <ol style="list-style-type: none"> <li>Intervention Strategies and Activities CD Rom Skill 75</li> </ol> </li> <li>Geo-Boards</li> </ul>	<ul style="list-style-type: none"> <li>Plot a graph using the data from the table.</li> </ul>  <p>-Have each child make observations about the data in their table.</p>																								

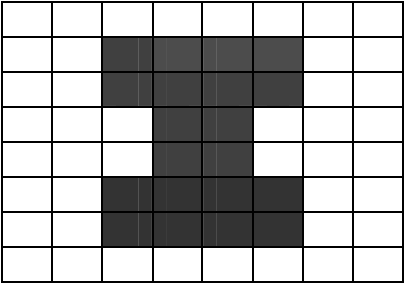
**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 5**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																				
6. Identify and describe the circumference of a circle.	<ul style="list-style-type: none"> <li>The diameter of a circle is the length of the line through the center and touching two points on its edge.</li> <li>Pi is <math>\pi = 3.14</math> or <math>22/7</math>.</li> <li><math>\pi</math> originated from studies of the relationship between the circumference and the diameter.</li> <li>The circumference <math>C</math> equals <math>\pi</math> times the diameter <math>d</math> or <math>c = \pi d</math>.</li> <li>Formula for circumference of a circle is <math>c = \pi d</math> or <math>C = 2\pi r</math></li> </ul>	<table border="1" style="display: inline-table; margin-right: 10px;"> <thead> <tr> <th></th> <th>Diameter</th> <th>Circumference</th> <th>C/D (Ratio)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>After a table is complete, have students add their data to a class list (on an overhead or at the board).</li> </ul>		Diameter	Circumference	C/D (Ratio)	1				2				3								<ul style="list-style-type: none"> <li>Intervention Strategies and Activities CD Rom Skill 75</li> <li>Number Heroes</li> <li>Geo-Board Level P, Q</li> <li>Math Jingle CD 3 – 4 Track II</li> </ul>	<ul style="list-style-type: none"> <li><b>Find the Error:</b> Give students several statements where they find the error and correct them.  <b>Example:</b> The diameter of a circle that John measured is 18 inches. John estimated the circumference to be about 6 inches. Describe and correct his error.</li> </ul>
	Diameter	Circumference	C/D (Ratio)																					
1																								
2																								
3																								
7. Calculate the area of rectangles and squares using $\text{cm}^2$ , $\text{m}^2$ , and $\text{km}^2$ .	<ul style="list-style-type: none"> <li>Area is the number of square units needed to cover a surface. You can count square units to find area.</li> <li>You can also use a formula for the area of a rectangle.  <b>Area = length x width or <math>A = l \times w</math>.</b></li> </ul>	<ul style="list-style-type: none"> <li>Work with a partner. Cut out the triangles below from each of your sheets. Tape them together to form a parallelogram.</li> </ul>  <ul style="list-style-type: none"> <li>Find the areas of the constructed parallelogram.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.4 pg. 492</li> <li>Helping Children Learn Math pg. 404</li> <li>Mathematics for Elementary Teachers pg. 580</li> <li>Problem Solving 25.3 Harcourt Math Bk. 4</li> <li>Intervention Strategies and Activities</li> <li>CD ROM Skill 72-73</li> </ul>	<ul style="list-style-type: none"> <li>Write to explain how to find the area of a square when you know only the length of one side.</li> <li>Construct their own figures and find the areas of the same.</li> </ul>																				

**SCOPE OF WORK  
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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>8. Differentiate between applications of area and perimeter.</p>	<ul style="list-style-type: none"> <li>Two figures can have the same area but different perimeter, or different area but same perimeter.</li> <li>Area is the amount of surface to be covered.</li> <li>Perimeter is the distance around the outside of a figure (object).</li> </ul>	<ul style="list-style-type: none"> <li>Find the area and perimeter of each figure. Then draw another figure that has the same area but different perimeter.</li> </ul>  <ul style="list-style-type: none"> <li>Describe situations from real life to students such as “after school, yesterday I had to mow the lawn.” Was this an example involving area or perimeter? Let students tell their stories.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 497 -Reteach 25.4 - Problem Solving 25.4</li> </ul>	<ul style="list-style-type: none"> <li>Use grid sheet and create figures with specified areas and perimeters.</li> <li>Write in mathematics journals how to tell the difference between perimeter and area.</li> </ul>
<p>9. Estimate and measure volume with appropriate units.</p>	<ul style="list-style-type: none"> <li>The measure of the space that a solid figure occupies is called <b>volume</b>. Volume is measured in cubic units.</li> <li>You can find volume in two ways: (a) count the numbers of cubes as you build a 6 cube x 2 cube x 3 cube rectangular prism or (b) multiply the length, width and height of the rectangular prism to find the volume in cubic units.</li> </ul>	<p>Find the volume</p> <ul style="list-style-type: none"> <li>Have students estimate the length width and height of boxes. Then have them multiply the dimensions to estimate the volume of the box. Students record the estimated volumes.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 146 a. Practice 26.3 b. Reteach Practice Challenge 26.3 c. Problems Solving 26.3 d. Intervention Strategies and Activities CD ROM Skills 36</li> </ul>	<ul style="list-style-type: none"> <li><b>Lesson Quiz</b> E.g. Lela has a suitcase that is 30 cm by 60 cm by 10 cm. What is the volume of her suitcase?</li> </ul>


**SCOPE OF WORK  
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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																				
9. Estimate and measure volume with appropriate units (Continued)		<ul style="list-style-type: none"> <li>Have students use centimetre rulers to measure the length, width, and height of each box to the nearest centimetre and multiply to find the volume. -Students record their results and compare them with the guesses.</li> </ul>		<ul style="list-style-type: none"> <li>Complete table on page 515 of Harcourt Math Bk. 4.</li> </ul>																				
10. Express millimetres as litres and vice versa using decimal notations.	<ul style="list-style-type: none"> <li>Millilitres (mL) and a litres (L) are metric units of capacity. E.g. 1 mL = 0.001L</li> </ul>	<ul style="list-style-type: none"> <li>Have students complete the table.</li> </ul> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Container</th> <th>Actual</th> <th>Conversion</th> <th>Explanation</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____mL</td> <td>_____L</td> <td></td> </tr> <tr> <td>_____</td> <td>_____L</td> <td>_____mL</td> <td></td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li><b>Millimetre-Litre Show Down</b> <ol style="list-style-type: none"> <li>Class is divided into two teams.</li> <li>Teacher asks questions where students express millimetres as litres and vice versa.</li> <li>The team with the most correct answers is the winner.</li> </ol> </li> </ul>	Container	Actual	Conversion	Explanation	_____	_____mL	_____L		_____	_____L	_____mL										<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 477</li> <li>Conversion Sheets</li> </ul>	<ul style="list-style-type: none"> <li><b>Journal Entry:</b> Write to explain the following:               <ol style="list-style-type: none"> <li>If a syringe contains 0.073L of the H1N1 flu vaccine. How many mL would 10 syringes contain?</li> </ol> </li> <li>Students create questions expressing litres as millilitres and vice versa. Students also supply the answers for the questions.</li> </ul>
Container	Actual	Conversion	Explanation																					
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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>11. Create and solve problems with capacity measures.</p>	<ul style="list-style-type: none"> <li>• <b>Capacity</b> is an attribute of a container that can be introduced to young children by asking, “Which holds more?”</li> </ul> <p><b>Capacity</b>            1 liter (L) = 1,000 milliliters            1 metric cup = 250 milliliters.</p> <p>1 tablespoon (tbsp) = 3 teaspoons (tbsp)            1 cup ( c ) = 8 fluid ounces (fl. oz)            1 pint (pt) = 2 cups            1 quart (qt) = 2 pints            1 gallon (gal) = 4 quarts</p> <p><b>Examples</b>            How many quarts are in 2 gallons?            2 gal = ____qt</p> <p>gallons      quarts in 1 gallon            quarts</p> $\begin{array}{ccccccc} \downarrow & & \downarrow & & \downarrow & & \\ 2 & \times & 4 & = & 8 & & \\ \text{So, } & 2 \text{ gallons equals} & & & 4 \text{ quarts} & & \end{array}$	<ul style="list-style-type: none"> <li>• Students view containers and state, which one holds the most and least liquid. Students justify their responses.</li> </ul> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• Students are placed in cooperative groups where they solve problems with capacity measures. Students justify their responses.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4. pg. 460</li> <li>• Harcourt Math Bk. 4 pg. 477</li> <li>• Teaching Children Mathematics pg. 396</li> </ul>	<ul style="list-style-type: none"> <li>• Create a display of various containers with specific problems. Students solve the problems.</li> </ul> <p>Example: How many quarts are in 4 gallons?</p> <ul style="list-style-type: none"> <li>• Students create a booklet of questions and answers pertaining to measuring capacity.</li> </ul>

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OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>12. Use standard units to estimate and measure mass.</p>	<ul style="list-style-type: none"> <li>Mass is the amount of matter in an object</li> </ul> <p style="text-align: center;">Mass / Weight</p> <p>1 grams(g) = 1,000(mg)    1 pound = 160oz  1kg = 1,000 grams    1 ton = 2,000lbs</p> <p><b>Example</b>  How many grams are equivalent to 2 kilograms?  <b>Think:</b> there are 1,000 grams in 1 kg  <math>2 \text{ kg} = 2 \times 1,000 = 2,000\text{g}</math>  So, 2,000g are equivalent to 2 kg</p>	<ul style="list-style-type: none"> <li>Choose the more reasonable measurement for the objects.</li> </ul> <div style="text-align: center;">  </div> <p>1g or 1kg    5g or 5kg    200g or 20kg    600g or 600kg</p> <ul style="list-style-type: none"> <li>Use standard units to estimate and measure mass of certain items. Students then compare estimated results with actual results.</li> <li><b>Group Activity:</b> <ol style="list-style-type: none"> <li>Distribute a paper clip and mathematics textbook to each group. Each group makes a list of as many items as they can with 3 minutes that are about the same mass as the paper clip or the mathematics textbook.</li> <li>A representative from each group reads the group's list aloud and explains their rationale for the 2 groups of items.  Paper clip = 1g; book = 1kg.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 <ol style="list-style-type: none"> <li>Reteach, Practice, Challenge 24.4</li> <li>Problem Solving 24.4</li> <li>Math Jingle CD 3.4 - Track 15</li> </ol> </li> <li>Intervention Strategies and Activities CD ROM Skills 29, 66</li> <li><a href="http://www.harcourtschool.com/elab2002">www.harcourtschool.com/elab2002</a></li> </ul>	<ul style="list-style-type: none"> <li>Worksheet on estimating and measuring mass.</li> <li>Using items in their homes, students create a list of objects that weigh between <ol style="list-style-type: none"> <li>1 g-70 kg</li> <li>1 lb-1 ton</li> </ol> </li> </ul>

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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
13. Create and solve problems involving mass measurement.	<ul style="list-style-type: none"> <li>You can use multiplication to change kilograms to grams.</li> <li>Have discussion on how to change grams to kilograms.</li> </ul>	<ul style="list-style-type: none"> <li>Students work in pairs to solve problems.</li> </ul> <p><b>Example:</b> Wesley needs to move 840 kg of mangoes from Arawak Cay to Paradise Island in a dinghy. The dinghy can carry no more than 120 kg at a time. What is the fewest number of trips he will have to make?</p>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 476               <ol style="list-style-type: none"> <li>Reteach, Practice; Challenge 24.4</li> <li>Problem Solving 24.4</li> <li>Transparency 24.4</li> <li>Intervention Strategies</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Students create problems and explain answers.</li> </ul>
14 Estimate, compare and measure time needed to complete a task.	<ul style="list-style-type: none"> <li>There are two attributes of events that can be measured: time of occurrence and length of duration.</li> </ul>	<p><b>Obstacle Course</b></p> <ul style="list-style-type: none"> <li>Students guess the time they will need to complete every task and an average time needed to complete the entire course. Each discipline is timed using a stop watch.</li> </ul> <p><b>Prompts</b></p> <ol style="list-style-type: none"> <li>Write the multiples of 9 up to 108.</li> <li>Recite Psalm 23</li> <li>Identify Washington D.C, Baghdad, Nassau, Port au Prince on a world map.</li> <li>Spell five conjunctions, adjectives, and interjections.</li> </ol> <p>Students will explain why times varied.</p>	<ul style="list-style-type: none"> <li><a href="http://www.harcourtschool.com/elab2002">www.harcourtschool.com/elab2002</a></li> <li>Harcourt Math Bk 4. pg 120</li> <li>Helping Children Learn Mathematics pg. 118</li> </ul>	<ul style="list-style-type: none"> <li>Create an obstacle course that can be completed within a specified time.</li> </ul>

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15. Estimate the relationship among seconds, minutes, hours, days, weeks, months, years, decade and centuries	<p><b>Time</b></p> <p>1 minute = 60 sec. 1 year = 12 months or about 52 weeks 1 year = 365 days 1 day = 24 hours 1 leap year = 366 days 1 week (wk) = 7 days 1 decade = 10 years 1 century = 100 years</p> <ul style="list-style-type: none"> <li>You can begin describing the time of occurrence by giving a time span. For example, it happened today, in the morning, in October.</li> <li>Students can tell which of two events take longer if their lengths, are greatly different. If the events are similar in duration, children can tell which lasts longer if both events begin at the same time.</li> </ul>	<ul style="list-style-type: none"> <li><b>How long does it take you?</b> <ol style="list-style-type: none"> <li>Students work in groups to complete chart based on the topic.</li> <li>Discuss why answers may differ.</li> </ol> </li> </ul> <table border="1" style="margin-top: 10px;"> <thead> <tr> <th></th> <th>Seconds</th> <th>Minutes</th> <th>Hours</th> <th>Days</th> <th>Weeks</th> <th>Months</th> <th>Year s</th> <th>Decades</th> </tr> </thead> <tbody> <tr> <td>Grow Old</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>→</td> </tr> <tr> <td>Graduate</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>→</td> <td></td> <td></td> </tr> <tr> <td>Clean House</td> <td></td> <td></td> <td>→</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Eat Lunch</td> <td></td> <td>→</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Bake a Cake</td> <td></td> <td></td> <td>→</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Smile</td> <td>→</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Brush Your Teeth</td> <td>→</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Seconds	Minutes	Hours	Days	Weeks	Months	Year s	Decades	Grow Old								→	Graduate						→			Clean House			→						Eat Lunch		→							Bake a Cake			→						Smile	→								Brush Your Teeth	→								<ul style="list-style-type: none"> <li>Helping Children Learn Mathematics pg.398</li> <li>schedules</li> </ul>	<ul style="list-style-type: none"> <li>Plot a bar graph using intervals of 1 minute. Use at least five persons to demonstrate these activities.               <ol style="list-style-type: none"> <li>Heading up books</li> <li>Eating lunch</li> <li>Dressing for school</li> <li>Singing the national anthem</li> </ol> </li> </ul>
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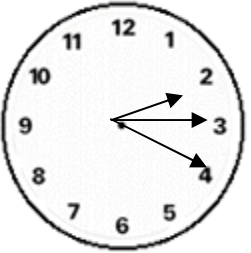
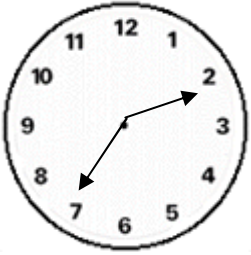
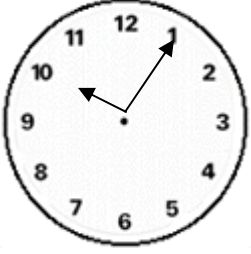
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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
16. Record the data in SI format	<ul style="list-style-type: none"> <li>• <b>SI</b> means Systems International, which advocates placing the units in order, largest first. For example year, month, day. Write July 10<sup>th</sup>, 1973 in Systems International form. <b>1973/ 07/10</b></li> </ul>	<ul style="list-style-type: none"> <li>• Write birthdays of family members in Systems International form.</li> <li>• Compare the American and British format of writing dates.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://physics.nist.gov/cuu/units/units.html">http://physics.nist.gov/cuu/units/units.html</a></li> </ul>	<ul style="list-style-type: none"> <li>• Conduct a debate to tell which format is better (British or American).</li> </ul>
17. Read and write times to the nearest minute on twelve and twenty-four hour on clocks	<ul style="list-style-type: none"> <li>• You can read the scale on a clock (hour, minute, and second).</li> <li>• A military service uses the 24 hour clock. A day starts at midnight shown as 00:00. The day ends the next midnight shown as 24:00 hours.</li> <li>• The first 2 digits show the hour and the last two digits show the minutes. E.g. 03:45 = 3:45 a.m.</li> </ul>	<ul style="list-style-type: none"> <li>• Set clocks using 12 hour and 24-hour clocks. Students write the time on both clocks and compare them.</li> <li>• Write specific times in digital notation (4:20)</li> </ul>	<ul style="list-style-type: none"> <li>• Teaching Children Learn Mathematics pg. 403</li> <li>• Harcourt Math Bk. 4 pgs. 116-118</li> <li>• Harcourt Math Newsroom Video Leap Day</li> </ul>	<ul style="list-style-type: none"> <li>• Compare and contrast the 12 hour and 24 hour clock.</li> <li>• Explain which of the clocks is more ideal to use.</li> </ul>

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	<ul style="list-style-type: none"> <li>• Read and write this time as: 2 hours 24 minutes and 16 seconds.</li> <li>- 24 minutes 16 seconds after two</li> <li>- 44 seconds before 2:25</li> </ul> 	<ul style="list-style-type: none"> <li>• Write the time shown on the clock in 2 different ways.</li> </ul>   <ul style="list-style-type: none"> <li>• Write the times as a.m. or p.m.</li> <li>a. 14:40</li> <li>b. 02:15</li> </ul>		<ul style="list-style-type: none"> <li>• Complete problems within a set time.</li> <li>• Using a clock, groups of students complete problems within in a set period. They submit solutions at a specified time.</li> </ul> <p><b>NB</b> Students must be mindful of the times.</p>

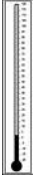

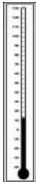

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18. Convert hours to minutes and vice versa.	<ul style="list-style-type: none"> <li>• 60 sec. = 1 min. 60 mins. = 1 hour</li> <li>• To convert from a smaller unit to a larger unit divide. E.g. 120 sec. = ___mins. 120 sec ÷ 60 = 2 mins.</li> <li>• To convert from a larger unit to a smaller unit, multiply. E.g. 3 hours = ___ mins. 3 x 180 = mins.</li> </ul>	<ul style="list-style-type: none"> <li>• Play Time Concentration. Match the equivalent time.</li> </ul>		

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19. Solve problems involving elapsed time.	<ul style="list-style-type: none"> <li>Elapsed time is the time passed from the start to the end of an activity.</li> </ul> <p><b>Example 1</b> A karate presentation began at 2:30 pm. If it lasted 35 minutes, at what time did it end? Use addition</p> <table style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">Hrs.</td> <td>Mins.</td> </tr> <tr> <td style="padding-right: 20px;">2</td> <td>30</td> </tr> <tr> <td style="padding-right: 20px;">+</td> <td>35</td> </tr> <tr> <td style="padding-right: 20px;">3</td> <td>05</td> </tr> </table> <p><b>Think:</b> 60 minute =1 hr So 65 mins. is 1hr. 05 mins. 3 hours 05 minutes Presentation ended at 3:05 p.m.</p> <ul style="list-style-type: none"> <li><b>Other Ways</b> <ol style="list-style-type: none"> <li>Count forward on a clock</li> <li>End time – Elapsed time = Start time</li> </ol> </li> </ul>	Hrs.	Mins.	2	30	+	35	3	05	<p><b>How Time Flies!</b></p> <p>Use a clock to solve time problems.</p> <p>12:25 now _____ : _____ 2 hr. 20 min later</p> <p>8:50 now _____ : _____ 5 hr later</p> <p>12:05 now _____ : _____ 20 min before</p>	<ul style="list-style-type: none"> <li>Helping Children Learning Mathematics pg. 404</li> <li>Harcourt Math newsroom video.</li> <li>Leap Day Calendar clocks.</li> </ul>	<ul style="list-style-type: none"> <li>Use a number line to find elapsed time.</li> </ul>
Hrs.	Mins.											
2	30											
+	35											
3	05											
20. Read the thermometer for Celsius and Fahrenheit and convert from degrees Celsius to Fahrenheit and vice versa (Continued).	<ul style="list-style-type: none"> <li>Degrees Fahrenheit are customary units for measuring temperature.</li> <li>Some temperatures are less than 0°F. These are negative temperatures. The lowest temperature marked on the thermometer at the right is -10 °F</li> </ul> <p><b>Example</b> Look at the table. How much would the temperature change if it dropped from the normal high to the normal low <b>Normal high:</b> 16 °F <b>Normal Low</b> -2°F</p>	<ul style="list-style-type: none"> <li><b>Fahrenheit Make-up</b> Match the temperature on the thermometer with the event by drawing a line to connect them. E.g.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   </div> <div style="text-align: center;">   </div> </div>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs. 554-557</li> <li>-Intervention Cards</li> <li>-Enrichment Book Intervention Strategies and Activities CD-ROM Skills 5-6, 59</li> <li>-Retouch, Practice Challenge and Problems Solving 29.1 and 29.2</li> <li>Mathematics in Motion: A Resource Book for Primary Teachers, pg. 114</li> </ul>	<ul style="list-style-type: none"> <li>Record the temperature of two islands for a week. Display the information on a line graph on a table.</li> </ul>								

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**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>20. Read the thermometer for Celsius and Fahrenheit and convert from degrees Celsius to Fahrenheit and vice versa.</p>	<p><b>Step 1</b> First find change in temperature from 16°f to 0°F. The change in temperature is 16°</p> <p><b>Step 2</b> Find the change in temperature from 0°F to - 2°F The change in temperature is 2°</p> <p><b>Step 3</b> Add the two changes <math>16^{\circ} + 2^{\circ} = 18^{\circ}</math></p>	<p><b>Celsius Practice</b> For numbers 1 – 4, use a thermometer to find the change in temperature.</p> <p>1) 67° C and 50° C 2) 48°C and -10°C 3) -1 °C and 50°C 4) - 15°C and 22°C</p>		<ul style="list-style-type: none"> <li>• Complete Quiz</li> </ul> <p><b>E.g.</b> ___hrs = 120 min. 3 1/4 hrs. = ___ min.</p>

**SCOPE OF WORK  
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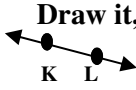

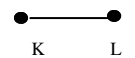


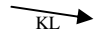
**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space

**Essential Questions**

1. What is the difference between a point, ray, line, line segment?
2. How are angles measured and classified?
3. How can plane and solid shapes be described?
4. How can you use open and closed curves in every day life?
5. How will a shape look when rotated, reflected, and/or translated?
6. How can you visualize the differences between two and three-dimensional figures?
7. What is symmetry and congruency? How can you verify symmetry and congruency?
8. How can measurements be used to solve problems?

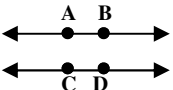

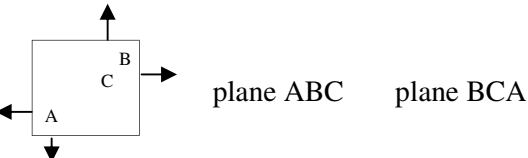

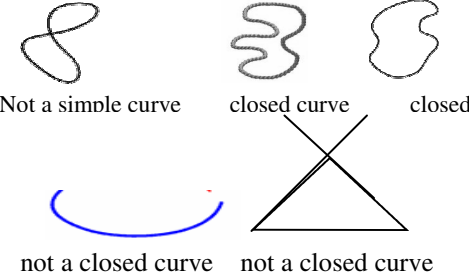
**SCOPE OF WORK  
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Draw and describe points, lines, line segments, rays, parallel and perpendicular lines, and planes (Continued).</p>	<ul style="list-style-type: none"> <li>• A <b>point</b> names a location on an object in space. <b>Draw it</b>      <b>Read it</b>      <b>Write it</b>     • A              point A              point A</li> <li>• A <b>line</b> is a straight path of points that goes on and on in both directions. It has no endpoints. <b>Draw it,</b>      <b>Read it,</b>      <b>Write it.</b>       Line KL      </li> <li>• A <b>line segment</b> is part of a line. It has two end points. <b>Draw it,</b>      <b>Read it,</b>      <b>Write it.</b>       Line Segment           K      L              KL</li> <li>• A <b>ray</b> is part of a line. It has one endpoint and goes on and on in one direction. <b>Draw it,</b>      <b>Read it,</b>      <b>Write it.</b>       Ray KL      </li> </ul>	<ul style="list-style-type: none"> <li>• Use spaghetti to make lines, line segments, rays, and planes.</li> <li>• Use locations on maps to illustrate points, line segments, and planes.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pg. 321     a. Problem Solving (Link-Up to Art),Harcourt Math pg. 323</li> <li>• Mathematics for Elementary Teachers pg. 422</li> <li>• Mathematics in Motion: A Resource Book for Teachers, pg. 77</li> <li>• Cards</li> <li>• Rulers</li> <li>• Maps of The Bahamas</li> <li>• Spaghetti</li> <li>• glue</li> </ul>	<ul style="list-style-type: none"> <li>• Have students draw and describe points, types of lines and planes.</li> </ul>

**SCOPE OF WORK  
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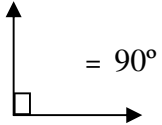

**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Draw, describe and illustrate points, lines, line segments parallel and perpendicular lines and planes.</p>	<ul style="list-style-type: none"> <li>• <b>Parallel lines</b> are lines that never intersect.  </li> <li>• <b>Perpendicular lines</b> are lines that intersect to form right angles.  </li> <li>• A <b>plane</b> is a flat surface of points with no end. A plane is named by at least three points in the plane  </li> </ul>			
<p>2. Distinguish between open and closed curves (Continued).</p>	<ul style="list-style-type: none"> <li>• A <b>simple closed curve</b> does not cross itself and encloses a part of the plane.    <b>simple curve</b></li> <li>• An <b>open curve</b> is a curve with endpoints. Simply, the ends do not join.</li> </ul>	<ul style="list-style-type: none"> <li>• Use thread to complete the following examples. curves: closed curve and not a simple curve.  </li> </ul>	<ul style="list-style-type: none"> <li>• Mathematics for Elementary Teachers, pg. 420</li> <li>• Harcourt Math Bk.5, pg. 486</li> <li>• thread</li> <li>• glue</li> <li>• paper</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and write letters that are examples of open and closed curves.</li> </ul>



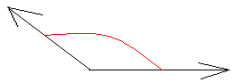
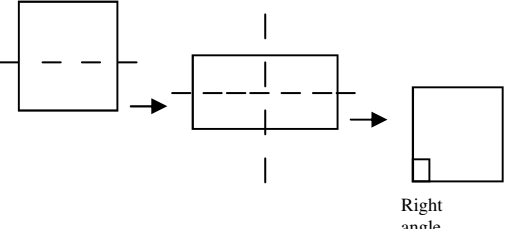
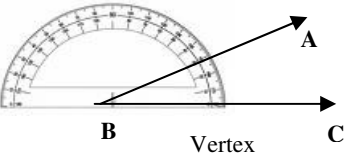
**SCOPE OF WORK  
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Distinguish between open and closed curves.				
3. Compare and estimate the various sizes of different angles by greater than, less than or equal to $90^\circ$ .	<ul style="list-style-type: none"> <li>Two rays with the same end-point form an angle. The rotation of the arms (ray) gives the measure of the angle. The angle is at the vertex. The end-point is called the vertex.</li> <li><b>Right Angle</b> forms a square corner. The angle is exactly <math>90^\circ</math></li> </ul>  <ul style="list-style-type: none"> <li>An <b>acute angle</b> is an angle that measures less than a right angle (<math>90^\circ</math>).</li> </ul> 	<ul style="list-style-type: none"> <li>Have students view a parade of officers during Independence celebration. Point out right turns that show exactly <math>90^\circ</math>.</li> <li>Inform students that acute means sharp. Have students identify common objects that have sharp points that are examples of acute angles.</li> <li>Allow students to set clock arms to:             <ol style="list-style-type: none"> <li>show specific times</li> <li>name the angles formed</li> <li>estimate the size of the angles</li> <li>tell if the angles are greater than, less than or equal to <math>90^\circ</math></li> </ol> </li> <li>Make an angle using a sheet of paper. Fold the paper twice to make an angle like this. The angle you have made is called a right angle</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4, pgs. 321, 340             <ol style="list-style-type: none"> <li>Practices and Problem Solving pg. 322.</li> </ol> </li> <li>Mathematics for Elementary Teachers, pgs. 413-414</li> <li>Helping Children Learn Math pg. 381</li> <li>clock</li> <li>watch</li> </ul>	<ul style="list-style-type: none"> <li>Quiz: Have students use clocks set at specific times to create questions on angles.</li> </ul>

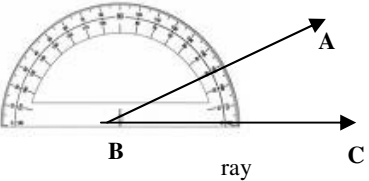
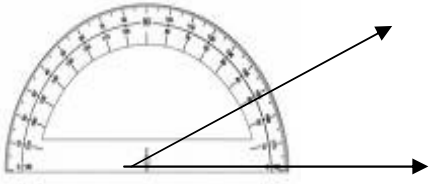
**SCOPE OF WORK  
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>3. Compare and estimate the various sizes of different angles by greater than, less than or equal to (Continued).</p>	<ul style="list-style-type: none"> <li>An <b>obtuse angle</b> is an angle that measures greater than a right angle (<math>90^\circ</math>) but less than <math>180^\circ</math></li> </ul> 	<ul style="list-style-type: none"> <li>Make an angle using a sheet of paper. Fold the paper twice to make an angle like this. The angle you have made is called a right angle</li> </ul> 		
<p>4. Measure angles to <math>180^\circ</math> using a protractor (Continued).</p>	<ul style="list-style-type: none"> <li>A <b>protractor</b> can be used to measure the size of the opening of an angle. The <b>scale</b> on a protractor is marked from <math>0^\circ</math> to <math>180^\circ</math>. Example: Use a protractor to measure angle ABC.</li> </ul> <p><b>Step 1</b> Place the center of the protractor on the vertex of the angle</p> <p style="text-align: center;">Extend the ray</p> 	<ul style="list-style-type: none"> <li>Students trace figures and use a protractor to measure angles.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4, pgs. 340 &amp; 341</li> <li>Mathematics for Elementary Teacher, pg. 412</li> <li>Mathematics in Motion: A Resource Book for Primary Teachers, pg. 94</li> <li>protractor</li> <li>ruler</li> </ul>	<ul style="list-style-type: none"> <li>Use a map of Down Town Nassau and Paradise Island. Allow students to highlight two of their favourite locations from a specific point. Students measure the distance between their highlighted points using a protractor.</li> </ul>

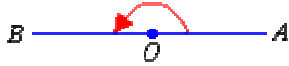
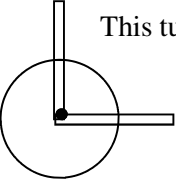
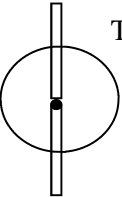
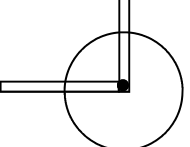
**SCOPE OF WORK  
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>4. Measure angles to <math>180^\circ</math> using a protractor.</p>	<p><b>Step 2</b> Line up the center point and the <math>0^\circ</math> mark on the protractor with one ray of the angle.</p>  <p><b>Step 3</b> Read the angle measure the ray passes through on the scale.</p> <p>Write angle measure in degrees (<math>^\circ</math>)</p>  <p>The measure of <math>\angle ABC = 50^\circ</math></p>			
<p>5. Demonstrate knowledge of the sum of angles in a circle and on a straight line (Continued).</p>	<ul style="list-style-type: none"> <li>• A circle is a closed figure made up of points that are the same distance from the center.</li> <li>• The unit used to measure an angle is a degree (<math>^\circ</math>) A complete turn around the circle is <math>360^\circ</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Use turns of geo-strips to show different angles</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4, pg. 342</li> <li>• Paper</li> <li>• Stick</li> </ul>	<ul style="list-style-type: none"> <li>• Using a protractor, have students calculate the number of degrees when moving from one point to another.</li> </ul>

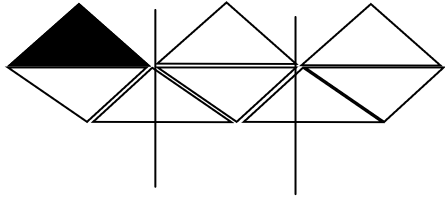
**SCOPE OF WORK**  
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>5. Demonstrate knowledge of the sum of angles in a circle and on a straight line.</p>	<ul style="list-style-type: none"> <li>The angle of a straight line is <math>180^\circ</math> and it is half turn around the circle.</li> </ul> 	<p><b>Step 1</b> Open the geo-strips to form a <math>90^\circ</math> angle.</p>  <p>This turn is a <math>\frac{1}{4}</math> turn around a circle</p> <p><b>Step 2</b> Now open the geo-strip <math>\frac{1}{4}</math> turn more to make a <math>180^\circ</math> angle.</p>  <p>This is a <math>\frac{1}{2}</math> turn around the circle</p> <ul style="list-style-type: none"> <li>Open your geo-strip another <math>\frac{1}{4}</math> turn to make a <math>270^\circ</math> angle.</li> </ul>  <p>This is a <math>\frac{3}{4}</math> turn around a circle</p>	<ul style="list-style-type: none"> <li>elastic bands</li> <li>tacks</li> <li>compass</li> </ul>	<p><b>Example:</b> A child starts at compass point east and moves clockwise to the south point. How many degrees has the child moved?</p>


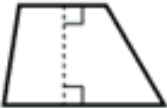
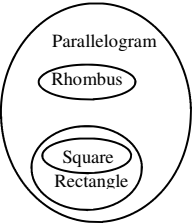
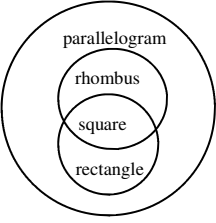
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**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>6. Identify and classify polygons up to 10 sides including special quadrilaterals such rectangles, parallelogram, square, rhombus, kite, dart, trapezium (Continued).</p>	<ul style="list-style-type: none"> <li>A <b>polygon</b> is a closed plane figure with straight sides. Polygons are named by the number of sides or number of angles they have.</li> </ul> <p><b>E.g.</b> triangle, quadrilateral, pentagon, octagon</p> <p>Triangle = 3 sides                   3 angles</p> <p>Quadrilateral = 4 sides                   4 angles</p> <p>Pentagon = 5 sides                   5 angles</p> <ul style="list-style-type: none"> <li>A <b>parallelogram</b> is a quadrilateral whose opposite sides are parallel and congruent.</li> </ul> <p>Hexagon = 6 side and 6 angles Heptagon = 7 sides and 7 angles Octagon = 8 sides and 8 angles Nonagon = 9 sides and 9 angles Decagon = 10 sides and 10 angles</p>	<ul style="list-style-type: none"> <li><b>Can You Find?</b> See if you can find each of these in the design. Fill in the shape, and mark it with the matching letter.</li> </ul> <p>A triangle - isosceles B triangle - scalene C quadrilateral - not symmetric D quadrilateral - 4 line symmetry E pentagon - concave F pentagon - convex G hexagon - symmetric H hexagon - symmetric I heptagon(7 sides) - symmetric J heptagon - not symmetric K octagon</p> 	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pg. 486</li> <li>Helping Children Learn Mathematics pg. 383</li> <li>Mathematics for Elementary Teachers p. 420</li> <li>crayons</li> <li>Markers</li> <li>cards</li> </ul>	<ul style="list-style-type: none"> <li>Have students create a game to name and describe polygons.</li> </ul>

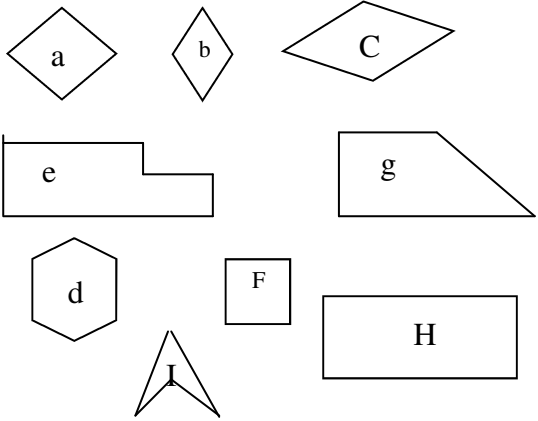
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**Sub-Goal 5:** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>6. Identify and classify polygons up to 10 sides including special quadrilaterals such rectangles, parallelogram, square, rhombus, kite, dart, trapezium. (Continued)</p>	<ul style="list-style-type: none"> <li>• <b>Rhombus</b>-a parallelogram with 4 congruent sides.</li> </ul>  <ul style="list-style-type: none"> <li>• Trapezium and trapezoid are the same. The term trapezium is used in England and trapezoid in America.</li> <li>• <b>Trapezium</b> is a quadrilateral with 2 and only two sides that are parallel.</li> </ul>  <ul style="list-style-type: none"> <li>• A <b>trapezoid</b> is a quadrilateral in with one pair of opposite (non-intersecting) sides that is parallel.</li> <li>• A <b>quadrilateral</b> has 4 sides and 4 angles.</li> <li>• A <b>rectangle</b> is a quadrilateral that has four right angles.</li> <li>• A <b>rhombus</b> is a quadrilateral that has four congruent sides.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify various polygons in the environment and explain why it has that shape. <ul style="list-style-type: none"> <li>a. home</li> <li>b. school</li> </ul> </li> <li>• To find all the attributes of a trapezoid, which of the following Venn diagram is correct?</li> </ul> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">trapezoid</div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;">trapezoid</div> <div style="text-align: center;">  </div> </div> <p><b>Correct One</b></p>	<ul style="list-style-type: none"> <li>• Mathematics for Elementary Teachers 429</li> <li>• Harcourt Math Book 4 pg. 348</li> <li>• Helping Children Learn Math pg. 383</li> </ul>	<ul style="list-style-type: none"> <li>• Given the properties, students must name the quadrilaterals that have the said properties.</li> </ul>

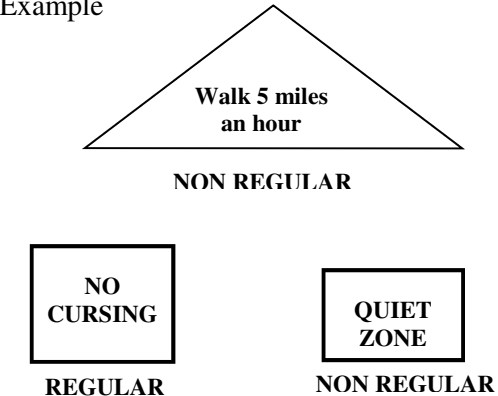
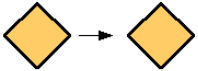
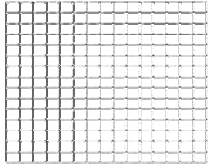
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**Sub-Goal 5:** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>6. Identify and classify polygons up to 10 sides including special quadrilaterals such rectangles, parallelogram, square, rhombus, kite, dart, trapezium.</p>	<ul style="list-style-type: none"> <li>A <b>square</b> is a quadrilateral that has four congruent sides and four right angles.</li> </ul>	<p><b>Classify Me</b> Classify and name quadrilaterals. Mark each of the figures using the numbers below:</p> <ul style="list-style-type: none"> <li>If it is a quadrilateral use 1</li> <li>If it has two pairs of parallel sides use 2</li> <li>If it has all right angles use 3</li> <li>If it has all congruent sides use 4</li> </ul>  <p>a. Any figure marked 1 and 2 is a _____  b. Any figure marked 1, 2, and 3 is a rectangle as well as a _____  c. Any figure marked 1, 2, and 4 is a _____ as well as a _____.  d. Any figure marked 1, 2, 3, and 4 is a _____ and a _____ as well as a square.</p>		

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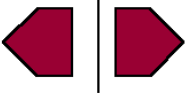
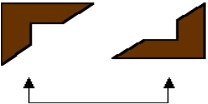
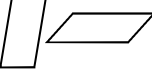
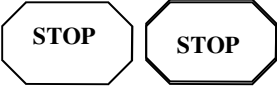
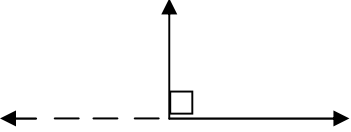

**Sub-Goal 5:** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
7. Distinguish between regular and non-regular polygons	<ul style="list-style-type: none"> <li>Regular polygons have all sides and angles equal. e.g Triangle (equilateral) quadrilateral (square), regular hexagon.</li> <li>Non-regular polygons have sides that have different lengths. e.g. Triangle (isosceles, scalene) quadrilateral (kite), rectangle, pentagon</li> </ul>	<ul style="list-style-type: none"> <li>Construct school signs using regular and non-regular polygons. They will be placed in strategic areas of the school.</li> </ul> <p>Example</p> 	<ul style="list-style-type: none"> <li>Mathematics for Elementary Teachers pg. 420</li> <li>Cereal boxes</li> <li>Crayons</li> <li>markers</li> <li>Ruler</li> <li>pencils</li> </ul>	<ul style="list-style-type: none"> <li>Have students create a booklet of regular or non-regular polygons.</li> </ul>
8. Demonstrate various motions as a translation, reflection and rotation (Continued).	<ul style="list-style-type: none"> <li><b>Transformations</b> are different ways to move a figure. Three kinds of transformations are translation, reflection, and rotation.</li> <li>A <b>translation</b> is the movement of a figure on a straight line.</li> </ul> 	<ul style="list-style-type: none"> <li><b>Transformation</b></li> <li><b>Step 1:</b> Copy each pair of figures on dotted paper</li> </ul>  <ul style="list-style-type: none"> <li><b>Step 2:</b> Cut out one in each pair, and move it in any way to check for congruency.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4. pg.326</li> <li>Mathematics for Elementary Teachers pg.504</li> <li>Centimeter dot paper</li> <li>ruler</li> <li>scissors</li> <li>mira</li> </ul>	<ul style="list-style-type: none"> <li>Write a journal entry explaining the movements involved during the three forms of translations and give examples of when these movements are done in school.</li> </ul>



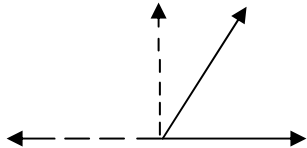
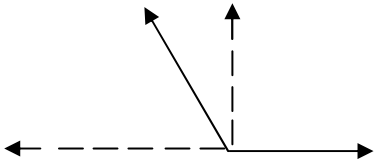
**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: GEOMETRY**  
**GRADE: 5**

**Sub-Goal 5:** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>8. Demonstrate various motions as a reflection, translation, and rotation.</p>	<ul style="list-style-type: none"> <li>A <b>reflection</b> is a movement of a figure to a new position by flipping it over a line.  </li> <li>A <b>rotation</b> is the movement of a figure by turning it around a point.  </li> <li>Two plane drawings are congruent if one can be moved onto the other using a rotation, a translation, a reflection or some combination of these motions</li> </ul>	<p>Step 3: Trace one of each pair of geometric figures, and use a rotation, translation, or reflections to determine if the two shapes are congruent. If the shapes are congruent state which motion you used to show this.</p> <p>F </p> <p>F </p>		
<p>9. Identify acute, obtuse, and right angles and measure angles to 180° (Continued).</p>	<ul style="list-style-type: none"> <li>A <b>right angle</b> forms a square corner and it measures exactly 90°  </li> </ul>	<ul style="list-style-type: none"> <li>Create kites from scrap paper and identify the angles on the kites they constructed (the sticks crossing each other form right angles.)  <b>Example:</b> When hoisting your kite, you arm pits can show acute, right and obtuse angles depending on where the kite is in the air or on the ground  </li> </ul>	<ul style="list-style-type: none"> <li>Mathematics for Elementary Teachers pg. 413</li> <li>Harcourt Math Bk. 4 pg. 321</li> <li>Kites</li> </ul>	<ul style="list-style-type: none"> <li>Quiz: Identify and measure acute, obtuse, and right angles.</li> </ul>

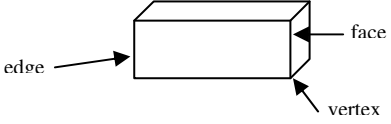
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 5**

**Sub-Goal 5:** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>9. Identify acute, obtuse, and right angles and measure angles to 180 degrees.</p>	<ul style="list-style-type: none"> <li> <p><b>An acute angle</b> is an angle that measure less than a right angle (<math>90^\circ</math>).</p>  </li> <li> <p><b>An obtuse angle</b> is an angle that measures greater than a right angle (greater than <math>90^\circ</math> less than <math>180^\circ</math>)</p>  </li> </ul>			

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 5**

**Sub-Goal 5:** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes, and space.

OBJECTIVES	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																																
<p>10. Investigate, classify, and name solid shapes (Continued).</p>	<ul style="list-style-type: none"> <li>• <b>Polygons</b> have only length and width, so they are two dimensional figures. Solid figures have length width and height so they are three dimensional figures.</li> <li>• A <b>solid</b> is a union of a simple closed surface and it's interior.</li> <li>• <b>Cone:</b> pointed figure that has a flat round base</li> <li>• <b>Cube</b> has 6 congruent square faces.</li> <li>• <b>Pyramid</b> has a polygon base and triangular sides that meet at a single point.</li> <li>• <b>Prism:</b> has two congruent polygonal regions that are connected by parallel line segments</li> </ul>	<ul style="list-style-type: none"> <li>• Find the number of faces, edges, and vertices of the solid figures in the table below</li> </ul> <div style="text-align: center;">  </div> <table border="1"> <thead> <tr> <th>Name</th> <th># of faces</th> <th># of edges</th> <th># of vertices</th> </tr> </thead> <tbody> <tr> <td>Cube</td> <td>6</td> <td>12</td> <td>8</td> </tr> <tr> <td>Rectangle</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Prism</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Triangle</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pyramid</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Square</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pyramid</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• <b>Solid Mystery</b> Solve each of these mysteries by constructing a 'suspect'. If you think there is more than one suspect look at clue 2.</li> </ul>	Name	# of faces	# of edges	# of vertices	Cube	6	12	8	Rectangle				Prism				Triangle				Pyramid				Square				Pyramid				<ul style="list-style-type: none"> <li>• Mathematics for Elementary Teachers pg. 453</li> <li>• Harcourt Math Bk. 4 pg. 508</li> <li>• Helping Children Learn Mathematics pg.367</li> <li>• Mathematics in Motion: A Resource Book for Primary Teachers, pgs. 85, 87</li> </ul>	<ul style="list-style-type: none"> <li>• Students classify and name solid shapes.</li> </ul>
Name	# of faces	# of edges	# of vertices																																	
Cube	6	12	8																																	
Rectangle																																				
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**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 5**

**Sub-Goal 5:** Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes, and space.

OBJECTIVES	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
10. Investigate, classify, and name solid shapes.		<p>The diagram consists of several interconnected nodes:</p> <ul style="list-style-type: none"> <li><b>Top Left Triangle (Clue 1):</b> Each edge is perpendicular to four other edges.</li> <li><b>Top Middle Circle (Clue 2):</b> There are 6 edges.</li> <li><b>Top Right Hexagon (Clue 1):</b> The side edges are perpendicular to the bottom edges.</li> <li><b>Middle Left Triangle (Clue 2):</b> edges are not at the same length.</li> <li><b>Middle Middle Circle (Clue 1):</b> No edge perpendicular.</li> <li><b>Middle Right Hexagon (Clue 2):</b> There are 3 side edges.</li> <li><b>Bottom Left Box (Clue 1):</b> No side edges are perpendicular to the bottom edges.</li> <li><b>Bottom Right Box (Clue 2):</b> Each bottom is perpendicular to two.</li> </ul> <p>Arrows indicate the following relationships:</p> <ul style="list-style-type: none"> <li>A dashed arrow points from the top-left triangle to the middle-left triangle.</li> <li>A dashed arrow points from the top-middle circle to the middle-middle circle.</li> <li>A dashed arrow points from the top-right hexagon to the middle-right hexagon.</li> <li>A dashed arrow points from the bottom-left box to the bottom-right box.</li> <li>A dashed arrow points from the middle-middle circle to the bottom-right box.</li> </ul>		

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: STATISTICS AND PROBABILITY**  
**GRADE: 5**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods: predict results; and interpret uncertainty, using concepts of probability.

**Essential Questions**

1. What is the difference between the median and the range?
2. How can you find the mode of a set of data?
3. What is the benefit of charts, diagrams, tables, and graphs in our daily lives?
4. How is probability used to predict outcomes in problem-solving?
5. How can experimental and theoretical probabilities be used to make predictions and draw conclusions?

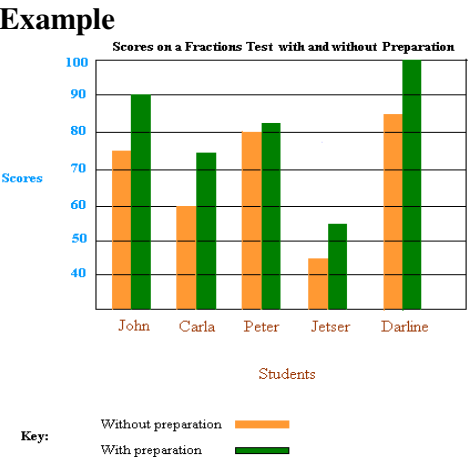
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: STATISTICS AND PROBABILITY  
GRADE: 5**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods: predict results; and interpret uncertainty, using concepts of probability.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
1. Find mean, median, mode, and range of a set of data.	<ul style="list-style-type: none"> <li>• The mean or average is the number found by dividing the sum of a set of numbers by the number of addends.</li> <li>• The mode is the number that occurs most often. There may be more than one mode, or there may be no mode.</li> <li>• The median is the middle number. Remember to arrange the numbers in order from least to greatest.</li> <li>• The range is the difference between the greatest and the least values in a set of data.</li> </ul>	<ul style="list-style-type: none"> <li>• In groups, students use different graphs where they find the mean, median, mode, and range of a set of data.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs.276, 86- 88</li> </ul>	<ul style="list-style-type: none"> <li>• Students create problems and solve them. These problems deal with the mean, median, mode, and range of a set of data.</li> </ul>
2. Determine the most appropriate graph for a given set of data	<ul style="list-style-type: none"> <li>• Graphs are used to display data.</li> <li>• Bar graphs display countable data with horizontal and vertical bars.</li> <li>• Line graphs are used to show change, or increases and decreases over a period.</li> </ul>	<ul style="list-style-type: none"> <li>• Create varied types of graphs using local data.</li> <li>• Locate graphs in newspapers etc.               <ul style="list-style-type: none"> <li>a. Discuss data.</li> <li>b. Peruse and discuss graphs that are inappropriate for given data.</li> </ul> </li> <li>• Create a concentration type game. Match the data with the name of the most appropriate type of graph.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 4 pgs.106-109</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with specific sets of data. Let them tell the most appropriate graphs to use for each set.</li> <li>• Examine students' completed games and answer keys.</li> </ul>

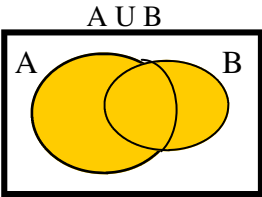
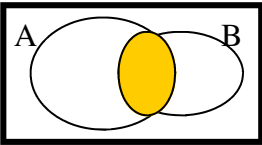
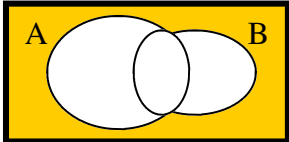
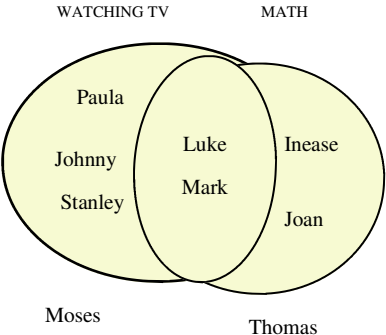
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: STATISTICS AND PROBABILITY  
GRADE: 5**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods: predict results; and interpret uncertainty, using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Analyze data to make decisions to solve problems	<ul style="list-style-type: none"> <li>Analyzing data is to study and understand the information. This information can be used to solve problems or make sound decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Propose the following problem to students. The Principal wants to create a weekly menu of healthy foods to be sold to students. Help this principal create a menu with cost per item. Have students:               <ol style="list-style-type: none"> <li>Collect data from other students: favorite foods and the ideal costs</li> <li>Create menu</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4 pgs.110 &amp; 111</li> </ul>	<ul style="list-style-type: none"> <li>Present students with data and questions that require decisions to be made. Have students provide solutions.</li> </ul>
4. Read and interpret double bar graphs.	<ul style="list-style-type: none"> <li>A double bar graph is a graph that shows two different sets of data.</li> </ul> <p><b>Example</b></p>  <p>Key: Without preparation — Orange bar With preparation — Green bar</p>	<ul style="list-style-type: none"> <li>Create graphs using local information <b>Example:</b> How many girls and how many boys like:               <ol style="list-style-type: none"> <li>Pepperoni pizza</li> <li>Sausage pizza</li> <li>Vegetable pizza</li> </ol> </li> <li>Allow students to:               <ol style="list-style-type: none"> <li>Develop questions</li> <li>Create answers keys</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li><a href="http://www.basicmathematics.com">http://www.basicmathematics.com</a></li> <li>Harcourt Math Bk. 4 pg. 100</li> </ul>	<ul style="list-style-type: none"> <li>Complete Practice and Problem Solving in Harcourt Math Bk. 4 pg. 101.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: STATISTICS AND PROBABILITY**  
**GRADE: 5**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods: predict results; and interpret uncertainty, using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>5. Read and interpret Venn diagrams.</p>	<ul style="list-style-type: none"> <li>A Venn diagram is a picture of sets.</li> <li>Sometimes sets have elements that overlap.</li> <li>Symbols: <math>\in</math> is an element/member of  <math>\cap</math> = Intersect  <math>\cup</math> = Union</li> </ul> <p>Within each set including the overlap (Union)</p>  <p style="text-align: center;"><math>A \cup B</math></p> <p>Where the sets overlap or intersect</p>  <p style="text-align: center;"><math>A \cap B</math></p> <p>Outside the sets</p> 	<ul style="list-style-type: none"> <li>In groups, students answer questions using the Venn diagram below.</li> </ul> <p><b>Hobbies of a Group of Friends</b></p>  <ol style="list-style-type: none"> <li>How many students enjoy watching television?</li> <li>How many children enjoy both mathematics and watching television?</li> <li>Which of the friends enjoy neither of these things?</li> </ol>	<ul style="list-style-type: none"> <li>Bright Sparks Bk. 4 pgs. 152 &amp; 153</li> </ul>	<ul style="list-style-type: none"> <li>Complete an activity sheet where students answer questions using a Venn diagram.</li> </ul>



**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: STATISTICS AND PROBABILITY**  
**GRADE: 5**

**Sub-Goal 6:** Collect, organize, and analyze data using statistical methods: predict results; and interpret uncertainty, using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
6. Identify the probability of an event and verify by doing trials in an experiment.	<ul style="list-style-type: none"> <li>Probability is the chance that an event will happen.</li> </ul> $P = \frac{\text{Number of Favourable Outcomes}}{\text{Number of Possible Outcomes}}$ <ul style="list-style-type: none"> <li>The probability of an event is a number from 0 to 1</li> <li>The probability of an event that is certain to occur is 1. The probability of an event NOT occurring is 0. expressed as 0, 1, or a fraction between 0 and 1</li> </ul>	<ul style="list-style-type: none"> <li>Create Spinners               <ol style="list-style-type: none"> <li>Coloured</li> <li>Names of pets</li> <li>Things of interest to students</li> </ol> </li> <li>Conduct experiments where students find the probability of events.</li> </ul> <p>Examples of items that can be used</p> <ol style="list-style-type: none"> <li>A bag of marbles</li> <li>Tossing of coins</li> </ol>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pg.578</li> </ul>	<ul style="list-style-type: none"> <li>Conduct experiments and record outcomes.</li> </ul>
7. Write probability as a fraction or ratio.	<ul style="list-style-type: none"> <li>Probability can be expressed as a ratio or a fraction.</li> <li>Probability as ratios:               <ol style="list-style-type: none"> <li>1 to 3</li> <li>1:3</li> </ol> </li> <li>Probability as ratio in fraction form.               <ol style="list-style-type: none"> <li>1/3</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Create board games that allow students to write probabilities as fractions or ratios.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 4. pg. 381</li> <li>Harcourt Math Bk.4 pg.542</li> </ul>	<ul style="list-style-type: none"> <li>Complete Problem Solving: Thinker's Corner. Harcourt Math Bk. 4. pg. 381</li> </ul> <p>Example: Write a ratio to compare the number of jumpers to the number of jump ropes. Write each ratio in three ways.</p>
8. Identify situations involving chance.	<ul style="list-style-type: none"> <li>Situations involving chance are those in which any outcome is possible. i.e. a desired outcome or</li> </ul> <p><b>Example:</b> Winning a raffle.</p>	<ul style="list-style-type: none"> <li>Allow students to create lists of situations involving chances</li> <li>Let students create unique games.</li> </ul>		<ul style="list-style-type: none"> <li>Students will outline names of situations that occur based on chance.</li> </ul> <p><b>Example:</b> Why the games are classified as Games of Chance?</p>

# **Scope of Work**

## **Primary School Mathematics**

### **Grade 6**

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

**Essential Questions**

1. Why is it important to know how to read and write numbers through billions?
2. How does a square number differ from the square root of a number? Explain the steps to calculate the square and square root of numbers.
3. What are the different ways a number can be written?
4. How can I compare and order rational numbers?
5. How is comparing numbers essential in everyday life?
6. How is exponential notation useful?
7. What is the difference between LCM and HCF?
8. How is an understanding of positive rational numbers, their representations, and relationships useful in problem solving?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
1. Read and write numbers through billions (12 digits).	<ul style="list-style-type: none"> <li>Numbers are part of the decimal system. This system uses ten digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 single or collectively. These digits form whole numbers or decimal numbers.</li> <li>These numbers can be written in standard form, expanded form, or word form. Example: <b>Standard Form:</b> 28 964 371 045  <b>Expanded Form:</b> 20 000 000 000 + 8 000 000 000 + 900 000 000 + 60 000 000 + 4 000 000 + 300 000 + 70 000 + 1 000 + 000 + 40 + 5  <b>Word Form:</b> twenty -eight billion, nine hundred sixty-four million, three hundred seventy- one thousand, forty-five.</li> </ul>	<ul style="list-style-type: none"> <li><b>School Campaign</b> <ol style="list-style-type: none"> <li>Hold a school wide campaign “How Big is a Million?” Collect one million of some small items (e.g. one-cent coins or bottle caps). Allow all students to contribute, count and decide where to display one million of selected items.</li> <li>Students investigate the question: What size room would be needed to hold one million basketballs?</li> </ol> </li> <li>Have students create game cards with standard forms of numbers on one side and word form on the other side.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pgs. 4-7</li> <li>Math Advantage Bk. 6 pg. 6</li> </ul>	<ul style="list-style-type: none"> <li><b>Quiz:</b> Students write numbers through billions. <b>Example:</b> <ol style="list-style-type: none"> <li>Write 4 237 824 923 in expanded notation.</li> <li>Name the value of 5 in the number 5 678 432</li> </ol> </li> <li>Students compete to read and write numbers through billions.</li> </ul>
2. Compare numbers through billions using the symbols <, >, and = (Continued).	<ul style="list-style-type: none"> <li>Comparing numbers means to show how they are alike, or is equal to (=), which is less than &lt;, or greater than &gt;.</li> </ul>	<ul style="list-style-type: none"> <li>Create place value mittens where numbers and symbols will be placed in the correct positions.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pgs. 8 &amp; 9</li> </ul>	<ul style="list-style-type: none"> <li>Use number lines to compare numbers.</li> <li>Complete worksheet comparing numbers up to billions.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Compare numbers through billions using the symbols <, >, and =		<ul style="list-style-type: none"> <li>Give students flash cards with numbers and symbols. Students create number paths comparing numbers with symbols. Example:  <math>63 = 59 + 4 &gt; 30</math>  <math>3\ 674\ 123\ 900 &lt; 54\ 985\ 653\ 349</math> </li> </ul>		
3. Explain orally and in writing the differences between: even and odd numbers, factors and multiples, and square and square root and prime and composite.	<ul style="list-style-type: none"> <li>An <b>even number</b> is an integer that can be divided exactly into two.</li> <li>An <b>odd number</b> of objects cannot be put into groups of two without an object left over.</li> <li>A <b>multiple</b> is the product of a given whole number and another whole number.</li> <li>A <b>square</b> is the product of a number and it can be expressed with the exponent 2.</li> <li>The <b>square root</b> is one of the two equal factors of a number. A number multiplied by itself equals the original number.</li> <li>A prime number has only 2 factors: itself and 1. Example: <math>11 = 11 \times 1 = (1, 11)</math></li> <li>Composite numbers have more than 2 factors. Example: <math>9 = 3 \times 3</math>; <math>1 \times 9 = (1, 3, 9)</math></li> </ul>	<ul style="list-style-type: none"> <li>Use circle games (Venn- diagrams) to categorize types of numbers               <ol style="list-style-type: none"> <li>odd number</li> <li>even numbers</li> <li>multiples of given numbers</li> </ol> </li> <li>Students also find numbers that are common to sets.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pgs. 258 &amp; 259</li> <li>Math Advantage Bk. 6 pg. 43</li> </ul>	<ul style="list-style-type: none"> <li>Teacher presents a list of problems. Students orally respond and explain their answers. Students also indicate if the answer is even, odd, factor, multiples, square, and square roots.</li> <li>Students create riddles with answers using even, odd, factor, multiples, square, and square roots.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
4. Identify and represent integers on the number line.	<ul style="list-style-type: none"> <li>• <b>Integers</b> are the set of whole numbers, their opposites and 0. Each integer, except 0, has an opposite that is the same distance from 0 but on the opposite side of 0.</li> <li>• <b>Integers</b> are classified as either positive or negative. Example: -3, -2, -1, 0, +1, +2, +3,</li> <li>• <b>Positive integers</b> can be written with or without a positive (+) sign: +6 or 6.</li> <li>• <b>Negative integers</b> are written with a negative (-) sign: -6</li> </ul>	<ul style="list-style-type: none"> <li>• Complete number lines with integers and their opposites.</li> <li>• Create thermometers where students show the positive and negatives of given temperatures.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math pg.384-389</li> <li>• Math Advantage Bk. 6 pg.466</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Activity:</b> Order integers on a number line from least to greatest. <b>Example:</b> +1, -2, 0, -3 <b>Answer -3, -2, 0, 1,</b></li> <li>• Complete number line and thermometers with integers.</li> </ul>
5. Write numbers as products of prime numbers using exponential notation where appropriate (Continued).	<ul style="list-style-type: none"> <li>• <b>Numbers</b> can be expressed as products of prime numbers using exponential notation/index form.</li> <li>• A <b>prime number</b> is a whole number that is greater than 1 whose only factors are 1 and itself.</li> <li>• <b>Exponential notation or index form</b> is a number that has a base and an exponent. The exponent shows how many times the number base is used as a factor. Example: <math>8 = 2 \times 2 \times 2 = 2^3</math> <math>56 = 2 \times 2 \times 2 \times 2 = 2^3 \times 7</math></li> </ul>	<ul style="list-style-type: none"> <li>• Create factor trees with               <ol style="list-style-type: none"> <li>a. cut outs of trees</li> <li>b. artificial foliage</li> </ol> </li> <li>• Complete factor trees in at least two different ways. The stems have difficult factors.</li> </ul>	<ul style="list-style-type: none"> <li>• Math Advantage Bk. 6 p. 86</li> <li>• Harcourt Math Bk. 5 pgs. 268-277</li> </ul>	<ul style="list-style-type: none"> <li>• Make models of factor trees. Students explain models to classmates.</li> <li>• Create booklets with factor trees. Students provide the answer key as well.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
5. Write numbers as products of prime numbers using exponential notation where appropriate.	<ul style="list-style-type: none"> <li>Two methods of finding prime factorization of a number are:               <ol style="list-style-type: none"> <li>dividing by prime numbers</li> <li>using a factor tree.</li> </ol> </li> </ul>			
6. Use prime factors to find LCM and HCF.	<ul style="list-style-type: none"> <li><b>Least common</b> multiple (LCM) is the smallest of the common multiples in a set of multiples.  <b>Example:</b> 8 and 4                -Multiples of 8= <b>8</b>, 16, 24, 32                -Multiples of 4 = 4, <b>8</b>, 12, 16                LMC = 8</li> <li><b>Highest common</b> factor (HCF) or <b>Greatest common</b> factor (GCF) is the largest of the common factors in a set of factors.  <b>Example:</b> 10 and 25                Factors of 10 = 1, 2, <b>5</b>, 10                Factors of 25= 1, <b>5</b>, 25  <b>GCF= 5</b></li> </ul>	<ul style="list-style-type: none"> <li>Use the fraction calculator to identify the HCF of two or more numbers.</li> <li>Create concentration game cards to show sets of numbers and their               <ol style="list-style-type: none"> <li>LCM</li> <li>HCF</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pgs. 260-267</li> <li>Silver Burdette Mathematics Bk. 5 pgs. 206-208</li> </ul>	<ul style="list-style-type: none"> <li>Who Am I? Students answer questions like the following:               <ol style="list-style-type: none"> <li>I am the multiple of 2 and 5. Who am I?</li> <li>The factors of 36 are 1, 2, 3, 4, 6,9, 12,18, and 36. The factors of 81 are, 1, 3, 9, 27, and 81. My answer is 9? Who am I?</li> </ol> </li> <li>Students create instructional charts to explain how to use prime factors to find LCM and HCF.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>7. Estimate square roots of non- perfect squares using at least one of the following strategies:</p> <ul style="list-style-type: none"> <li>Identify the relationship between the number of digits in a number and the number of digits in its square root.</li> <li>Deduce that if a number lies between two other numbers then the square root of that number must lie between the square roots of the other two numbers.</li> </ul>	<ul style="list-style-type: none"> <li>A non perfect square is a number that cannot be expressed as an integer multiplied by itself.</li> <li>Non- perfect squares do not have square roots that are whole numbers. For example, 7 is not a perfect square. Its square root is 2.65.</li> <li>To calculate the square root of a non-perfect square:               <ol style="list-style-type: none"> <li>place the values of the adjacent perfect squares on a number line.</li> <li>Interpolate between the points to estimate to the nearest tenth.</li> </ol> <p><b>Example <math>\sqrt{27}</math></b></p> <ol style="list-style-type: none"> <li>The perfect square on each side of 27 is 25 (<b>5</b>) and 36 (<b>6</b>).</li> <li>Half way on the number line is 30.</li> <li>Therefore, <math>\sqrt{27}</math> is <b>5.2</b></li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Using a hundreds charts, let students highlight the numbers that are not perfect squares.</li> <li>a. Allow them to also write the square roots of these numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 .pg.258</li> <li>Math Advantage Bk. 6 .pg. 428</li> <li><a href="http://www.answers.yahoo.com">http://www.answers.yahoo.com</a></li> </ul>	<ul style="list-style-type: none"> <li>Create and solve 5 non-perfect squares.</li> </ul>
<p>8. Use HCF to simplify Fractions (Continued).</p>	<ul style="list-style-type: none"> <li>Simplifying fractions means to write them in lowest terms.</li> <li>To simplify fractions using the highest common factor (HCF), divide the numerator and denominator by the HCF.</li> </ul>	<ul style="list-style-type: none"> <li>Guide students to create and manipulate concentration type game cards with a fractional problems and matching simplified forms. Example</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">4/8 x 8/16</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">1/2 x 1/2</div> </div>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pgs. 294 &amp; 354</li> <li>Math Advantage. Bk.6. pg. 140</li> </ul>	<ul style="list-style-type: none"> <li>Write fractions in its lowest terms.</li> <li>Complete journal entries to tell and show how to simplify fractions.</li> </ul>



**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: NUMBER AND NUMBER SENSE  
GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
8. Use HCF to simplify fractions.	<p><b>Example:</b> <math>\frac{2}{6}</math></p> $\frac{2 \div 2}{6 \div 2} = \frac{1}{3}$			
9. Read, write, and identify decimals through thousandths.	<ul style="list-style-type: none"> <li>• <b>Decimals</b> are numbers that use place value and a decimal point to show tenths, hundredths, thousandths and so on.</li> <li>• The decimal point is referred to as “<b>and</b>” in oral identification and word form. Call a decimal according to the last place value.</li> </ul> <p><b>Example</b> 2.65 : two and sixty-five hundredths.</p>	<ul style="list-style-type: none"> <li>• Complete charts to show decimals in standard form, word form, and expanded form.</li> </ul>	<ul style="list-style-type: none"> <li>• McDougal Math pg. 108</li> <li>• Harcourt Math Bk. 5 pgs. 18-24</li> <li>• Place Value Board</li> </ul>	<ul style="list-style-type: none"> <li>• Complete Review/Test of Harcourt Math Bk. 5 pg. 28, Nos. 5, 8, 10, 14, 17, 19, 20.</li> <li>• Have students prepare and teach a mini lesson.</li> </ul>
10. Compare and order whole numbers, fractions and decimals using <, >, and = symbols.	<ul style="list-style-type: none"> <li>• Comparing whole numbers, fractions, or decimals mean to show how they are equal to, less than, or greater than.</li> <li>• <b>Ordering numbers</b> means to place them in order from least to greatest (ascending) or greatest to least (descending).</li> </ul> <p><b>Example: Greatest to least</b> 13.393, 13.309, 13.339, 13.039 <b>13.393, 13.339, 13.309, 13.039</b></p>	<ul style="list-style-type: none"> <li>• Let students create a domino type game where they compare whole numbers, fractions, and decimals using the symbols &gt;,&lt;, and =.</li> <li>• Have student create a magnetic board that can be used to compare and order numbered strips.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pg. 24</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Journal Writing:</b> How to compare whole numbers, fractions, and decimals using the symbols &gt;,&lt;, and =. Students also give examples.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
11. Describe orally and in writing equivalent relationship among fractions, decimals, and percent.	<ul style="list-style-type: none"> <li>Fractions, decimals, and percents are equivalent (equal) when they name the same amount in different forms.</li> </ul> Example $\frac{1}{2} = 0.5 = 50\%$ <div style="text-align: center; margin-top: 10px;"> <pre>               1/2 = 0.5 = 50%                                       v   v   v           Fraction Decimal Percent             </pre> </div>	<ul style="list-style-type: none"> <li>Use the hundred wheel/chart to introduce percent as another way to show a fractional part.</li> <li>Search newspaper for examples of fractions, decimals, and percents. Write the equivalent forms.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pgs. 62 &amp; 279</li> </ul>	<ul style="list-style-type: none"> <li>Journal Writing: Describe how fractions, percents, and decimals are equivalent. Cite examples</li> </ul>
12. Describe and compare two sets of data using ratios and appropriate notation such as a/b, a to b and a: b.	<ul style="list-style-type: none"> <li>Ratio is the comparison of two numbers/amounts. Ratios are used to compare a part to a part, a part to the whole, or the whole to a part.</li> </ul>	<ul style="list-style-type: none"> <li>Provide students with situations. Let them write ratios in three ways. Example: What is the ratio of vowels to consonant in the word PARALLELOGRAM?</li> </ul> <p><b>Word:</b> five to eight 5 : 8  <b>Fraction:</b> 5/8</p>	<ul style="list-style-type: none"> <li>Harcourt Math 5 pg. 540</li> <li><a href="http://www.harcourtschool.com/elab2002">www.harcourtschool.com/elab2002</a></li> </ul>	<ul style="list-style-type: none"> <li>Students create a booklet with pictures or words that can be used for comparisons.               <ol style="list-style-type: none"> <li>Write the ratio in three ways.</li> <li>Highlight the condition. For example part to part</li> </ol> </li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: NUMBER AND NUMBER SENSE**  
**GRADE: 6**

**Sub-Goal 1:** Demonstrate and apply knowledge and sense of numbers, including numeration, patterns, ratios, and proportions.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
13. Represent ratios in decimal form.	<ul style="list-style-type: none"> <li>• Ratio is the comparison of two quantities. Writing ratios as decimals may make it easier to compare ratios. To convert ratios in               <ol style="list-style-type: none"> <li>a. Fractions – convert the fraction to a decimal.</li> <li>b. Short word form or standard - write the ratio as a fraction. Convert the fraction to a decimal number.</li> </ol> </li> </ul> <p><b>Example</b>  <b>7 out of 10 = 7/10 = 0.7</b></p>	<ul style="list-style-type: none"> <li>• Allow students to create bookmarks with equivalent ratio and decimal forms.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pg. 560</li> <li>• Math Advantage Bk. 6 pg. 23</li> </ul>	<ul style="list-style-type: none"> <li>• Written quiz.</li> </ul>
14. Identify Pi as a special ratio and explain how it can be used to find the circumference of a circle.	<ul style="list-style-type: none"> <li>• Pi (<math>\pi</math>) is the ratio of the circumference to the diameter of a circle.</li> <li>• An approximate decimal value of Pi is 3.142 or <math>22/7</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students find the circumference or diameter of circular object such as cups, mugs, or CDs.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math 5 pg. 495</li> </ul>	<ul style="list-style-type: none"> <li>• Written quiz: Students identify Pi as a special ratio and explain how it can be used to find the circumference of a circle.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA**  
**GRADE 6**

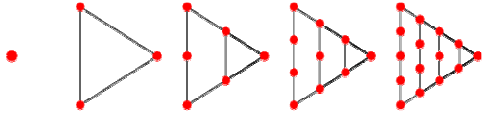
**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationship in data, solve problems and predict results.

**Essential Questions**

1. How can patterns, relations, and functions be used as tools to best describe and help explain real life situations?
2. What different interpretations can be obtained from a particular pattern or relationship?
3. How can a non-routine problem be solved?
4. How do models, tables, and graphs help to represent, analyze, and extend numerical and geometrical patterns?
5. How do algorithms work in addition, subtraction, division, and multiplication?
6. Why do we use variables?
7. How can algebraic symbols be used to efficiently express mathematical situations?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 6**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Identify and construct patterns relating to rectangular, square, oblong, and triangular numbers.</p>	<ul style="list-style-type: none"> <li>• Figurate numbers are represented by geometric patterns. Figurate numbers are sequences generated by figures made up of evenly spaced dots.</li> <li>• Oblong, triangular, rectangular, and square numbers are examples of figurate numbers.</li> <li>• <b>Oblong Numbers:</b> Any number that is the product of two consecutive integers. The first few oblong numbers are: 0, 2, 6, 12, 20, and 30.</li> <li>• <b>Triangular numbers</b> are numbers that create triangles. In other words 1, 3, 6, 10, 15, 21, ... They can be calculated by 1, 1+2, 1+2+3, 1+2+3+4, etc.</li> </ul> <div style="text-align: center;">  </div>	<ul style="list-style-type: none"> <li>• Use product grid or an array to build types of numbers.</li> <li>• Create rectangular, oblong, square, and triangular patterns with varied concrete objects.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pgs. 449 &amp; 270</li> <li>• Math Advantage Bk. 5 p. 539</li> <li>• <a href="http://www.math-magic.com">www.math-magic.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Present students with a variety of numbered patterns. Have them classify the patterns as square, oblong, rectangular, or triangular. Allow students to justify their answers.</li> <li>• Lesson quiz where they complete patterns with and without pictures.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 6**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
	<ul style="list-style-type: none"> <li>• <b>Rectangular numbers</b> are numbers that create rectangles. Rectangular numbers are: 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, etc.</li> <li>• <b>Square numbers</b> are <u>numbers</u> that is the <b>product</b> of two <u>equal integers</u>. For example 9 is a square number because <math>9 = 3 \times 3</math></li> </ul>			
2. Solve non-routine problems where finding a pattern is an appropriate strategy.	<ul style="list-style-type: none"> <li>• Non-routine problems are problems that require non-traditional algorithms or sums to solve them.</li> <li>• Non-routine problems provide a more highly probable method for discovering the solution to a problem. Building a model, drawing pictures, work backwards are non-routine problem solving strategies.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students task card with a variety of problems. Allow them to work in groups to develop patterns to solve. For example, how many different handshakes would take place between three and four friends?</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.mathpentath.org">www.mathpentath.org</a></li> <li>• <a href="http://www.purplemath.com">www.purplemath.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Have students create non-routine problems.</li> <li>• Have students create a short video broadcast to show the solutions to specific problems.</li> </ul>
3. Use patterns to make computation more efficient (Continued).	<ul style="list-style-type: none"> <li>• Patterns are used to make computation easier.</li> </ul>	<ul style="list-style-type: none"> <li>• Give students a variety of work cards with pattern starters. Let them complete up to the 'n' pattern set</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.5 pgs. 204 &amp; 148</li> </ul>	<ul style="list-style-type: none"> <li>• Have students create sets of pattern starters and allow their classmates to complete the patterns.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 6**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Use patterns to make computation more efficient.	$40 \times 9 = 360$ $400 \times 9 = 3\,600$ $4000 \times 9 = 36\,000$ What pattern do you notice?	For Example: $8 \div 2 = 4$ $80 \div 20 = 4$ $800 \div 20 = 40$ $8000 \div 20 = \underline{\quad}$ $80000 \div 20 = \underline{\quad}$ <ul style="list-style-type: none"> <li>Allow students to teach a mini lesson on the skill.</li> </ul>	<ul style="list-style-type: none"> <li>Math Advantage Bk.6 pg. 70</li> </ul>	<ul style="list-style-type: none"> <li>Complete journal entries to explain how patterns make computation easier.</li> <li>Have students create a quiz.</li> </ul>
4. Solve single variable linear equations using pictures and abstraction.	<ul style="list-style-type: none"> <li>A variable is a letter or symbol that stands for a number.</li> <li>A single variable linear equation is an equation that has one variable that represent a number. Example: <math>5y = 20</math> <math>y = 4</math></li> </ul>	<ul style="list-style-type: none"> <li>Present students with problems and guide them to write and solve equations.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pg. 412</li> <li>enVision Math Bk. 5. p. 73</li> </ul>	<ul style="list-style-type: none"> <li>Students will create single variable linear equations with answer key.</li> <li>Have students design a learning centre with their unique equations and answer keys.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: PATTERNS, FUNCTIONS, AND ALGEBRA  
GRADE 6**

**Sub-Goal 2:** Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
5. Solve story problems using algebraic equations.	<ul style="list-style-type: none"> <li>An algebraic equation is a number sentence that has a number, a variable, and uses the equal sign to show that two amounts are equal.</li> </ul> $2 + y = 53$	<ul style="list-style-type: none"> <li>Present students with stories. Guide them to write and solve equations.</li> </ul> <p><b>Example</b> Pete had 13 apples. Tina also had the same number of apples. Together they had 26 apples. How many apples did they have?</p> $13 + y = 26$ $y = 26 - 13$ $y = 13$ <ul style="list-style-type: none"> <li>Let students:               <ul style="list-style-type: none"> <li>Create stories</li> <li>Write answer keys</li> <li>Exchange stories and solve problems</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math 5 pg. 72</li> <li>Math Advantage Bk.6 pg.298</li> </ul>	<ul style="list-style-type: none"> <li>Students will write and solve algebraic equations from stories.</li> <li>Have students create and perform skits based on their stories.</li> </ul>



**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 6**

**Sub-Goal 3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

**Essential Questions**

1. How is estimation beneficial in real life situations?
2. How is mental mathematics useful? When is mental mathematics most useful?
3. How are models used to show how fractional parts are combined or separated?
4. Why is the order of operations essential?
5. How are commutative and associative properties different?
6. How are fractions, decimals and percent related?
7. Why is it useful to know how to convert among fractions, decimals, and percent?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>1. Estimate by several methods including rounding.</p>	<ul style="list-style-type: none"> <li>• Estimate means to find an answer that is closest to the exact answer. The answer is found by rounding, by <b>clustering</b>, or by using compatible numbers.</li> <li>• <b>Rounding</b> means to replace a number with one that tells about how many or how much.</li> <li>• <b>Clustering</b> is a method of rounding when all the addends are about the same. <b>Example</b> <math>669 + 678 + 699 + 682 = 700 \times 4</math> or 2800</li> <li>• <b>Compatible</b> numbers are pairs of numbers that are easy to compute mentally. <b>Example:</b> Compatible numbers for 6 are divisible by 6 such as 12, 18, 24, 30, ... <math>541 \div 7 = 490 \div 7 = 70</math> or <math>541 \div 7 = 560 \div 7 = 80</math></li> </ul>	<ul style="list-style-type: none"> <li>• Guide students to solve problems using rounding, clustering, or using compatible numbers.</li> <li>• Show students sets of numbers. <b>Example:</b> <math>673 \rightarrow 670</math> Have students tell which method was used to estimate rounding. Answer: <b>Rounding</b></li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math 5 pgs. 34, 48, 50, 56, 186 &amp; 187</li> <li>• <a href="http://wiki.answers.com">http://wiki.answers.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Have students create a bulletin board display to show methods for estimating numbers.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Apply the divisibility rules for 2, 3, 4, 5, 6, 8, 9,10.	<ul style="list-style-type: none"> <li>• A number is divisible by another number when the quotient is a whole number and there is a remainder of zero.</li> <li>• Divisibility rules can help you find factors.</li> </ul> <p><b>Example:</b> A number is divisible by:</p> <ul style="list-style-type: none"> <li>a. 2 if the last digit is an even number.</li> <li>b. 3 if the sum of the digits is divisible by 3</li> <li>c. 4 if the last two digits form a number divisible by 4.</li> <li>d. 5 if the last digit is 0 or 5</li> <li>e. 6 if the number is divisible by 2 and 3</li> <li>f. 8 if the last three digits are divisible by 8</li> <li>g. 9 if the sum of the digits is divisible by 9</li> <li>h. 10 if the last digit is 0.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Divisible Numbers</b> <ul style="list-style-type: none"> <li>a. Students work in groups of 2-4.</li> <li>b. Teacher gives students a number to use as a divisor.</li> <li>c. Students roll three to four dice (numbered cubes) then write as many 3-digit or 4-digit numbers that are divisible by the given divisor within 2 minutes.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.aboutmath.com">http://www.aboutmath.com</a></li> <li>• <a href="http://www.basicmath.com">http://www.basicmath.com</a></li> <li>• Harcourt Math Bk. 5. pgs. 258 &amp; 259</li> </ul>	<ul style="list-style-type: none"> <li>• Give students important dates in Bahamian history like 1492 and 1973 where they use the divisibility rules to determine if the number is divisible by 2, 3, 4, 6, 9, or 10.</li> <li>• Give students 3 or 4 digits where they form as many numbers that are divisible by a given divisor. <b>Example:</b> Use the digits 8 4 6 0 and make numbers that are divisible by 4 8640; 6048; 8640; 6840; 4608</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>3. Apply mental math strategies to addition, subtraction, multiplication, and division (Continued).</p>	<ul style="list-style-type: none"> <li>• Mental Math strategies do not require paper and pencil for arithmetic calculations</li> <li>• <b>Addition:</b> Use addition properties of zero, commutative, or associative. Example <math>7 + (9 + 6) = (7 + 9) + 6</math></li> <li>• <b>Compensation</b> is a property where you add an amount to one number and subtract an amount from the other to make a simpler addition.  <b>Example 1:</b> <math>58 + 72 = (58+2) + (72-2)</math>  This way you get an easy operation, <math>60 + 70</math> and can do it mentally. <b>Example 2:</b> Change one addend to a multiple of ten and then adjust the other addend to maintain the balance. <math>426 + 394</math> <math>(426 + 6) + 394 + 6 = 432 + 400 = 832</math></li> <li>• <b>Multiplication:</b> Use the identity, distributive, commutative, or associative properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide students with opportunities to apply mental math strategies involving the four operations.</li> <li>• <b>Math Relay</b> <ol style="list-style-type: none"> <li>a. Students complete number sentences in 15 seconds. The person with the most points wins the game.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Math Advantages Bk. 6 pgs. 36, 78 &amp; 79</li> <li>• Activity booklet of mental Mathematics: Department of Education 2007</li> <li>• <a href="http://www.hbschool.com/glossary/math2">http://www.hbschool.com/glossary/math2</a></li> <li>• <a href="http://www.bbc.co.uk/skillwise/numbers">http://www.bbc.co.uk/skillwise/numbers</a></li> <li>• <a href="http://wiki.answers.com">http://wiki.answers.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Students complete a speed test by applying mental math strategies using the four rules.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Apply mental math strategies to addition, subtraction, multiplication, and division..	i. Move the decimal point when multiplying by whole number powers of ten or decimal powers of tenth.  • <b>Division:</b> Use the divisibility rules to move the decimal point when dividing by whole number powers of ten or decimal powers of tenth.			
4. Perform calculations using addition, subtraction, multiplication, and division to solve problems.	<ul style="list-style-type: none"> <li>• Addition, subtraction, multiplication, and division are referred to as the four rules of operations.</li> <li>• Math vocabulary words or phases in word problems determine which of the four rules of operations should be used to solve word problems</li> </ul>	<ul style="list-style-type: none"> <li>• Create an obstacle course setting with a variety of problems. Instruct students to manipulate the course by completing the problems. Time students.</li> <li>• <b>Game: Pass it On</b> <ol style="list-style-type: none"> <li>a. The teacher calls out a number then tosses the ball to a student.</li> <li>b. The first student adds a number to the number given by the teacher, and then tosses the ball.</li> <li>c. The second student gives the sum, and then subtracts a number from it. The ball is tossed to the next student.</li> <li>d. The third student gives the difference and then gives a number to multiply the difference by.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math 5 pgs. 65A &amp; 65B, 144 &amp; 145</li> <li>• ball</li> <li>• <a href="http://www.lxL.com">http://www.lxL.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Students match addition, subtraction, multiplication, and division problems with their answers. Additionally, they must provide justification.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
		e. The fourth student gives the product and a number to divide the product by. Then the ball is tossed to the next student. f. The fifth student gives the quotient. He/She starts the game over by stating a number and then tossing the ball to another student. g. Any student who is unable to supply an answer is out of the game. • Guide students to compile a booklet with a variety of unique word problems. Students will highlight vocabulary words/phrases that assist with problem solving.		
5. Multiply and divide given amounts of money (No decimal divisors).	<ul style="list-style-type: none"> <li>• Multiplication and division are inverse operations.</li> <li>• The rules for multiplying and dividing decimals apply to multiplying and dividing money.</li> </ul>	<ul style="list-style-type: none"> <li>• Allow students to participate in shopping sprees. Set up shopping centre like environment in the classroom. Provide students with list of items they must select.</li> <li>i. Set a time limit.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pgs. 164, 225</li> </ul>	<ul style="list-style-type: none"> <li>• Students solve problems in which they multiply and divide amounts of money.</li> </ul>
6. Apply rules of order of operations (Continued).	<ul style="list-style-type: none"> <li>• Order of operations is a set of rules used to solve an expression with more than one operation.</li> <li>• You must know which operation to do first. Two mnemonics for remembering the orders are:  <b>(a) PEMDAS</b> <ul style="list-style-type: none"> <li>i. Perform operations in parenthesis</li> <li>ii. Clear exponents</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Allow student to create unique equations that require the rules of order of operations.</li> <li>• Give students a variety of equations where some are correct and others incorrect. Let students justify why equations are correct or incorrect (Can be done orally or in writing).</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math 5 pg. 88</li> <li>• Math Advantage 6 pg. 48</li> <li>• <a href="http://www.hbschool.com/elab">http://www.hbschool.com/elab</a></li> </ul>	<ul style="list-style-type: none"> <li>• Students solve equations in which they apply the rules of order of operations.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
6. Apply rules of order of operations.	iii. Multiply and divide from left to right iv Add or subtract from left to right <b>(b) BODMAS</b> i. bracket first ii. Orders (ie. Powers, square root, etc.) iii. Division and multiplication (left to right) iv. Addition and subtraction (left to right) <b>Example:</b> $47 + (3 \times 2^2 + 9)$ $47 + (3 \times 4 + 9)$ $47 + (12 + 9)$ $47 + 21 = 68$			
7. Simplify fractions (Continued).	<ul style="list-style-type: none"> <li>Simplifying fractions means to divide both the top and bottom of the fraction until you can't go any further (try dividing by 2,3,5,7,... etc).</li> <li>You can find the common factors for the numerator and the denominator.</li> <li>Find the greatest common factor (GCF). Divide this numerator and denominator by their GCF .  <b>Example:</b> <math>\frac{24}{30}</math>  <math>24 = 2, 3, 4, 6, 8, 12, \dots</math>  <math>30 = 2, 3, 5, 6, 10, 15</math> </li> </ul>	<ul style="list-style-type: none"> <li>Use fraction models to demonstrate how to simplify fractions.</li> <li>Teacher directs students to create maze games. The path has all fractions in simplest form, which leads to specific goals.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pgs. 294-297, 354</li> <li>Math Advantage Bk. 6 pg. 140</li> <li><a href="http://www.aboutmath.com">http://www.aboutmath.com</a></li> </ul>	<ul style="list-style-type: none"> <li>Students explain in their mathematics journals how to simplify a fraction. Students also create and solve two word problems.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basis operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
7. Simplify fractions.	The common factors are 2, 3, and 6. The GCF is 6. $\frac{24}{30} \div \frac{6}{6} = \frac{4}{5}$			
8. Apply rules of addition and subtraction to fractions and mixed numbers without and with regrouping.	<ul style="list-style-type: none"> <li>A mixed number is a whole number and fraction combined.</li> <li>To find mixed numbers, follow these steps. <b>Step 1:</b> Find the LCM and then write as equivalent fractions.  <b>Step 2:</b> Add or subtract the fractions.  <b>Step 3:</b> Add or subtract the whole numbers.  <b>Step 4:</b> If you cannot add or subtract the whole numbers regroup and then perform the necessary operation.  <b>Step 5:</b> Simplify if possible.</li> </ul>	<ul style="list-style-type: none"> <li>Allow students to use fractional models to illustrate problems with solution.</li> <li>Give students recipes with fractions of common ingredients. Students find the amount of that item by adding and subtracting to make the ingredient more or less for the required number of persons.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pgs. 332-336</li> <li>Math Advantage Bk. 6 pgs. 120-122</li> <li><a href="http://www.edhelper.com">http://www.edhelper.com</a></li> </ul>	<ul style="list-style-type: none"> <li>Students use fraction bars to model addition and subtraction of mixed numbers.</li> <li>Give students a mixed number. Have them write an addition and subtraction number sentence that would result in that mixed number. Answers may vary. <b>Example:</b> <math>3 \frac{1}{2}</math>  <b>Addition sentence</b> <math>1 \frac{1}{4} + 2 \frac{1}{4} = 3 \frac{2}{4} = 3 \frac{1}{2}</math>  <b>Subtraction Sentence</b> <math>8 \frac{7}{10} - 5 \frac{1}{5} =</math> <math>8 \frac{7}{10} - 5 \frac{2}{10} = 3 \frac{5}{10} = 3 \frac{1}{2}</math></li> </ul>



**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
9. Apply rules of multiplication to fractions.	<ul style="list-style-type: none"> <li>• Multiplying fractions:               <ol style="list-style-type: none"> <li>a. Reduce to simplest terms if possible.</li> <li>b. Multiply the numerators</li> <li>c. Multiply the denominators</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Fraction Bingo</b> <ol style="list-style-type: none"> <li>a. The teacher reads a fraction multiplication sentence.</li> <li>b. Students complete the sentence and cover the product on their Bingo cards.</li> <li>c. The first child to cover five boxes horizontally, vertically, or diagonally wins the game.</li> </ol> </li> <li>• Provide solutions to word problems. Let student write possible problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.5 pg. 348</li> <li>• Math Advantage Bk. 6 pg.136</li> <li>• <a href="http://www.aboutmath.com">http://www.aboutmath.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Students solve fraction word problems that require multiplication.</li> </ul>
10. Convert from fractions to decimal to percent (include mixed numbers such as $1\frac{1}{2}$ =1.5) (Continued).	<ul style="list-style-type: none"> <li>• Fractions, decimals and percents have equivalent forms to convert:               <ol style="list-style-type: none"> <li>a. Fraction to decimals                   <ul style="list-style-type: none"> <li>- divide numerator by denominator</li> </ul> </li> <li>b. Fraction to percents                   <ul style="list-style-type: none"> <li>- multiply to find equivalent ratios</li> <li>- divide numerator by denominators</li> </ul> </li> <li>c. Decimals to percents                   <ul style="list-style-type: none"> <li>- multiply by 100 or use place value</li> </ul> </li> <li>d. Decimals to fractions                   <ul style="list-style-type: none"> <li>- use place value</li> </ul> </li> <li>e. Percent to decimals divide by 100</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Guide students to create game cards. One-half of the cards will have the conversion form and the other half will state the rules.   <b>Example:</b>            Decimals to fraction use place value             % as decimals divide by 100</li> <li>• Give students advertisement from newspapers that entail fractions, percents, or decimals. Students convert the data from the advertisement to decimals, percents, or fractions.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math 5 page 560</li> <li>• Math Advantage Bk. 6 pgs.22, 23, 336, 337</li> <li>• newspapers</li> </ul>	<ul style="list-style-type: none"> <li>• Students make a flowchart showing the conversion of fractions to decimals to percent.</li> <li>• Students design newspaper advertisements with percents, fractions, and decimals.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: COMPUTATION AND ESTIMATION  
GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
10. Convert from fractions to decimal to percent (include mixed numbers such as $1\frac{1}{2}$ =1.5)	f. Percents to fractions - write the percent as ratio (numerator) - with second term (denominator) of 100. Write in simplest form.			
11. Apply rules of addition subtraction, multiplication and division to decimals.	<ul style="list-style-type: none"> <li>• A decimal number is a number with one or more digits to the right of a decimal point.</li> <li>• To add or subtract decimal numbers, align decimal points in place value position. Add or subtract from right to left. Regroup as needed.</li> <li>• To multiply decimals, multiply the factors as whole numbers. Place the decimal point in the product after finding the total number of decimal places in the factors. Count that many places from the right in the product.</li> <li>• Division of decimals numbers is similar to division of whole numbers. In vertical or column division, place the decimal point in the quotient above the decimal point in the dividend. In horizontal division, place the decimal point in the quotient.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Going Grocery Shopping</b> <ol style="list-style-type: none"> <li>a. Students visit a grocery store to collect cost of specific items using a pre-designed worksheet.</li> <li>b. At a convenient location, have students perform calculations involving the four operations.</li> </ol> </li> <li>• Using maps of The Bahamas, students add, subtract, multiply, and divide distances in decimals.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.5 pg. 50 Addition pg. 168 Multiplication pg. 226 Division</li> <li>• Math Advantage Bk. 6 pg. 64</li> <li>• <a href="http://www.lxL.com">http://www.lxL.com</a></li> <li>• maps</li> </ul>	<ul style="list-style-type: none"> <li>• In groups, have students write and dramatize television commercials that demonstrate how to add, subtract, multiply and divide decimals.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: COMPUTATION AND ESTIMATION**  
**GRADE: 6**

**Sub-Goal -3:** Estimate and understand the meaning, use, and connection between the four (4) basic operations; addition, subtraction, division and multiplication.

<b>OBJECTIVE</b>	<b>CONTENT</b>	<b>ACTIVITIES</b>	<b>RESOURCES</b>	<b>ASSESSMENT</b>
12. Create and solve problems using fractions and decimals.	<ul style="list-style-type: none"> <li>Fractions and decimals represent a part of a group</li> </ul>	<ul style="list-style-type: none"> <li>Let groups of students               <ol style="list-style-type: none"> <li>Create game boards with problems and answer keys</li> <li>Exchange games and manipulate.</li> </ol> </li> </ul>		<ul style="list-style-type: none"> <li>Compile a booklet of unique problems and supply an answer key.</li> </ul>
13. Explain the relationship among fractions, decimals, and percents.	<ul style="list-style-type: none"> <li>Ratios of numbers can be written as percents, fractions, and decimals.</li> <li>Fractions, decimals, and percents are related in their equivalent states.</li> <li>Percents greater than 100 are represented as a decimal greater than 1.</li> <li>A percent is compared to part of a 100.</li> <li>A decimal represents a number of hundredth.</li> </ul>	<ul style="list-style-type: none"> <li>Guide students to use models to create a display of equivalent fractions, decimals, and percents.</li> <li>Using raw scores of quizzes, students explain how the grades become a percent.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math 5 pg. 560</li> </ul>	<ul style="list-style-type: none"> <li>Students write in their mathematics journals to explain how fractions, decimals, and percents are related. Additionally, students give examples.</li> </ul>
14. Mentally compute the percent of a number.	<ul style="list-style-type: none"> <li>Other percentages can be related to 10% as this is an easy amount to calculate.  <b>Example</b> 10 % of 20 = 2            Using 10 we move the decimal place once in the number 20 to get 2.</li> <li>Other simple percentages to calculate mentally are 20 %, 25%, and 50%.</li> </ul>	<ul style="list-style-type: none"> <li>Using the population numbers of the islands of The Bahamas, students calculate percents of these numbers based on national averages.  <b>Example:</b> If 60 % of Andros' population is under the age of 18, how much is that?</li> <li>Have students practice using mental math to calculate the percent of various numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pg. 568</li> <li>Nodehillmaths.typepad.com/my/2008/calculating-per/html</li> <li><a href="http://www.youtube.com">http://www.youtube.com</a></li> </ul>	<ul style="list-style-type: none"> <li>Create brochures explaining how using multiples of 10 make mental math with percent easier.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: MEASUREMENT**  
**GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

**Essential Questions**

1. What is perimeter and how is it measured?
2. How do you find perimeter, area, and volume of geometric figures?
3. Why is it easier to use a geometric formula to solve real-world problems?
4. Why is it important to be able to convert from one unit of measurement to another?
5. How will using the tools and relationships of measures in the metric and customary systems help to estimate or find solutions to real-world problems?
6. What does the acronym SI stand for? How can we use SI to write dates?
7. Why is it important to know how to use the formula  $D = R \times T$ ?
8. How can you use reading and interpreting scales on maps in everyday life?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT									
1. Identify if a given situation requires a measure of length, volume, capacity, temperature, or mass.	<ul style="list-style-type: none"> <li>Certain situations require specific measuring outcomes. <b>For example:</b> <ol style="list-style-type: none"> <li>A person's height- measure of length.</li> <li>The amount of water needed to fill a cup-capacity.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Give groups of students' different measurement topic: length, mass, volume, or capacity. Have students generate examples of situations that use assigned types of measurement.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pg. 4</li> </ul>	<ul style="list-style-type: none"> <li>Have students create and solve story problems in their mathematics journals</li> </ul>									
2. Estimate and measure length/distance, volume, capacity mass and temperature in metric units.	<ul style="list-style-type: none"> <li>Metric units of length: millimetre, centimetre and metre, kilometre.</li> <li>Volume is the amount of space a solid figure occupies. It is measured in cubic units.</li> <li>Capacity is the amount a container can hold. Metric units of capacity are millilitre, litre, and kilolitre.</li> <li>Mass is the amount of matter in an object. Metric limits of mass are milligrams, gram, and kilogram.</li> <li>Temperature is the hotness or coldness of a body or environment.</li> </ul>	<ul style="list-style-type: none"> <li>Allow students to estimate and measure real objects. Then have them show the information on a table.</li> </ul> <p><b>For Example:</b></p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Object/Item</th> <th>Estimation</th> <th>Actual Measure</th> </tr> </thead> <tbody> <tr> <td>1. A cup of ice.</td> <td></td> <td></td> </tr> <tr> <td>2. distance around a desk or table</td> <td></td> <td></td> </tr> </tbody> </table>	Object/Item	Estimation	Actual Measure	1. A cup of ice.			2. distance around a desk or table			<ul style="list-style-type: none"> <li>Harcourt Math 5 pgs. 476, 522, 482</li> </ul>	<ul style="list-style-type: none"> <li>Quiz <b>Example:</b> What would be the most appropriate measure for the volume of a soda can? i. a. 360mL b. 2 liters c. 50 liters.</li> <li>Students write in their mathematics journal explaining how to estimate and measure length/distance, volume, capacity mass and temperature in metric units.</li> </ul>
Object/Item	Estimation	Actual Measure											
1. A cup of ice.													
2. distance around a desk or table													

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT				
<p>3. Solve problems in measurement which require the conversion of units.</p>	<ul style="list-style-type: none"> <li>• Some problems require conversion of units. To change smaller units to larger units, divide.</li> <li>• To change larger units to smaller units, multiply.</li> <li>• Units               <ul style="list-style-type: none"> <li>a. 7 days = 1 week</li> <li>b. 60 seconds = 1 minute</li> <li>c. 1 month= 28 to 31 days or about 4 weeks</li> <li>d. 1year = 12 months or 52 weeks or 365 days</li> </ul> </li> <li>• Customary Measures               <ul style="list-style-type: none"> <li>1 quart = 2 pints</li> <li>1 gallon = 4 quarts</li> <li>1 foot = 12 inches</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Place students in cooperate groups. Each group is given a problem to solve. Students solve problems and report findings to class.</li> </ul> <p><b>Sample questions</b></p> <ul style="list-style-type: none"> <li>a. The instructions for a science experiment call for 227 milligrams of potassium. What is the difference between this amount and 1 gram?</li> <li>b. The longest mammal is the blue whale. Its length is 31 meters. How many centimeters is that?</li> <li>c. David is making punch. He needs 3 cups of orange juice and 6 pints of lemonade. How many fluid ounces of orange juice and how many quarts of lemonade does he need?</li> <li>d. How many days are in 7 months?</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.5 pg. 476</li> </ul>	<ul style="list-style-type: none"> <li>• Create charts to show the rules for converting from one metric unit to another.</li> </ul> <table border="1"> <thead> <tr> <th>Items</th> <th>Items</th> </tr> </thead> <tbody> <tr> <td>kilo to hecto multiply by__</td> <td>gram to kilo divide by ____</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Have students create and solve story problems in their mathematics journals</li> </ul>	Items	Items	kilo to hecto multiply by__	gram to kilo divide by ____
Items	Items							
kilo to hecto multiply by__	gram to kilo divide by ____							

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
4. Express metric measure using decimal notation.	<ul style="list-style-type: none"> <li>• Decimal notation is the writing of a number in decimal form. <b>Example:</b> 50 cm = 0.5m</li> <li>• Use calculators to change linear units</li> </ul>	<ul style="list-style-type: none"> <li>• The class is divided into two teams to play the game <b>Metric Decimals</b>.               <ol style="list-style-type: none"> <li>a. Teacher calls metric measure problems. The group writes decimal notation on a miniature chalk or dry erase board.</li> <li>b. If the answer is correct, the team gets the point. If the team does not get the problem correct, it is referred to the next team. The team with the most points wins the game.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.5 pgs. 474-479</li> </ul>	<ul style="list-style-type: none"> <li>• Have students write the decimal notations for numbers given.</li> </ul>
5. Describe how other countries measure (time and money). (Continued)	<ul style="list-style-type: none"> <li>• Some countries measure in ways that are different from ours. For examples in Haiti, money can be written as 10, 00 for \$10.00.</li> <li>• Some countries use customary units and others use metric measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students examine the ways other countries measure that is different from ours. Create Venn diagrams to compare/ contrast details.</li> <li>• Create a sundial to explore time.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.eduplace.com">http://www.eduplace.com</a></li> </ul>	<ul style="list-style-type: none"> <li>• Create a unit of measure that can be used in a country. Have students explain how they came up with their invention.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
5. Describe how other countries measure (time and money).	<ul style="list-style-type: none"> <li>• Customary measurements include feet for length, gallons for capacity, and pounds for mass. Some countries that use the metric units are Rome, Germany, and the United States of America.</li> <li>• Metric units include metre for length, liter for capacity and gram for mass. Some countries that use this system are Australia and New Zealand.</li> </ul>			
6. Describe and record the date in SI format.	<ul style="list-style-type: none"> <li>• SI means International System of Units. The units are placed in order starting with the largest first.</li> </ul> <p style="margin-left: 40px;">Example: Year      Month      Day                   1998            2            14</p>	<ul style="list-style-type: none"> <li>• Allow students to create a directory of dates important to them in SI Format.</li> <li>• Students create a list of countries and occupations that use the SI Format.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="http://www.w3.org">http://www.w3.org</a></li> <li>• Mathematics in Motion: A Resource Book for Primary Teachers, pg. 118</li> </ul>	<ul style="list-style-type: none"> <li>• Create a timeline of historical dates in SI format.</li> <li>• Complete test items that allow students to               <ol style="list-style-type: none"> <li>a. Select dates in SI format</li> <li>b. Write dates in SI format</li> </ol> </li> </ul>



**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																														
7. Solve non-routine problems involving measures.	<ul style="list-style-type: none"> <li>Non-routine problems are unlike the common types that require a formula or state specific tools to use to solve them. Critical thinking skills are necessary to arrive at a solution.</li> </ul>	<ul style="list-style-type: none"> <li>Have students work in groups to provide solutions to open ended problems such as:               <ol style="list-style-type: none"> <li>How many cornflakes are in a box?</li> <li>How many students can fill a specific area?</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li><a href="http://www.teachers.net.qa">http://www.teachers.net.qa</a></li> </ul>	<ul style="list-style-type: none"> <li>Have students work in pairs to investigate how many different totals they can make choosing two of the numbers: 6, 7, 8, and 9.               <ol style="list-style-type: none"> <li>Allow the pairs some time to work on the problem in whatever way they decide</li> <li>Encourage students to organize their work in a two-way table.</li> <li>Discuss the different ways that they are keeping track of the possible combinations of numbers.                   <table border="1" style="margin-left: 40px;"> <thead> <tr> <th style="background-color: #cccccc;">+</th> <th style="background-color: #cccccc;">6</th> <th style="background-color: #cccccc;">7</th> <th style="background-color: #cccccc;">8</th> <th style="background-color: #cccccc;">9</th> </tr> </thead> <tbody> <tr> <td>6</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> </li> <li>Teacher asks the following questions.                   <ol style="list-style-type: none"> <li>What do you noticed about the table? It is symmetrical about the diagonal</li> <li>What is the minimum total? (12)</li> <li>What is the maximum total? (18)</li> <li>How many different totals are there in the table? (12)</li> </ol> </li> </ol> </li> </ul>	+	6	7	8	9	6					7					8					9									
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**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>8. Apply area and perimeter formulas to triangles and rectangles.</p>	<ul style="list-style-type: none"> <li>• Perimeter is the distance around a figure.</li> <li>• Formula to find perimeter:               <ul style="list-style-type: none"> <li>a. <b>Regular Polygons:</b> Perimeter = sum of the number of sides</li> <li>b. Rectangles : Perimeter = (2 x length) + (2 x width)</li> </ul> </li> <li>• Area is the number of square units needed to cover a surface.</li> <li>• Formula to find Area:               <ul style="list-style-type: none"> <li>a. Area of square = side x side</li> <li>b. Area of rectangle = length x width</li> <li>c. Area of triangles = <math>\frac{1}{2} \times (b \times h)</math></li> </ul> </li> </ul> <p><b>Note:</b> Include unknown sides in problems.</p>	<ul style="list-style-type: none"> <li>• Have students measure triangular and rectangular shaped areas.</li> <li>• Find the area and perimeter of your garden at home or at school.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pgs. 492, 406, 500</li> </ul>	<ul style="list-style-type: none"> <li>• Find the area and perimeter of a room in your house.</li> <li>• Quiz: Students use the formula to calculate the area and perimeter of triangular and rectangular figures.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: MEASUREMENT  
GRADE: 6**

**Sub-Goal 4:** Make and use measurements of objects, quantities, and relationships, and determine acceptable level of accuracy.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT																
9. Solve problems using km/hr where students apply $r \times t = d$ , and $s = d \times t$ formula.	<ul style="list-style-type: none"> <li>When people travel somewhere, on a trip, they want to figure out how far it is from the destination and how long it will take to get there.</li> <li>The formula <b>rate x time</b> is used to calculate distance traveled. <math>D = R \times T</math> The formula <b>distance x time</b> is used to calculate the speed. <math>S = D \times T</math></li> </ul>	<ul style="list-style-type: none"> <li>Guide students to set up a ramp and race match boxcars. Time the cars and the distance they travel. Compute the rate of travel.</li> </ul>	<ul style="list-style-type: none"> <li>Math Advantage Bk. 6 pg. 318</li> </ul>	<ul style="list-style-type: none"> <li>Complete a chart to show outcomes.</li> </ul> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Car</th> <th>Time</th> <th>Distance</th> <th>Rate</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>7</td> <td>4</td> <td>?</td> </tr> <tr> <td>B</td> <td>?</td> <td>16</td> <td>2</td> </tr> <tr> <td>C</td> <td>3</td> <td>?</td> <td>9</td> </tr> </tbody> </table>	Car	Time	Distance	Rate	A	7	4	?	B	?	16	2	C	3	?	9
Car	Time	Distance	Rate																	
A	7	4	?																	
B	?	16	2																	
C	3	?	9																	
10. Read and interpret scales on maps.	<ul style="list-style-type: none"> <li>Scale is a ratio between two sets of measurement. On maps, scales are used to convert distances on the earth to distances on paper.</li> <li>Scales compare inches or centimetres on a map to miles or kilometres on a real surface. To compare distances on a map with actual distances, use the ratio map actual distance.</li> </ul>	<ul style="list-style-type: none"> <li>Have students measure and draw to scale (on cm graph paper) their classroom and a room in their house.</li> </ul>	<ul style="list-style-type: none"> <li>Math Advantage Bk. 6 pg. 390</li> <li>Harcourt Math Bk.5 pg. 548</li> </ul>	<ul style="list-style-type: none"> <li>Have students use scales on maps to:               <ol style="list-style-type: none"> <li>explain what the ratios represents</li> <li>compare scales: draw conclusion about how events could happened.</li> </ol> </li> </ul>																
11. Estimate and measure area of rectangular and irregular polygons.	<ul style="list-style-type: none"> <li>Area is the number of square units needed to fill in a shape.</li> <li>Guide the students to find the area.</li> </ul>	<ul style="list-style-type: none"> <li>Provide students with a variety of irregular shaped polygons. Have students trace outlines of the polygons on grid paper and find the area thereof.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pg. 508</li> </ul>	<ul style="list-style-type: none"> <li>Have students find the area of irregular polygons using grid paper.</li> </ul>																

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: GEOMETRY**  
**GRADE: 6**

**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

**Essential Questions**

1. How can describing, classifying, and comparing properties of different lines, angles, and certain 2- and 3-dimensional shapes be useful for solving geometric problems in our 3-D world?
2. How can transformations and symmetry be used to investigate and describe geometric situations?
3. How are points, lines, line segments, rays, and angles related?
4. What are some examples of lines and line segments in the real world?

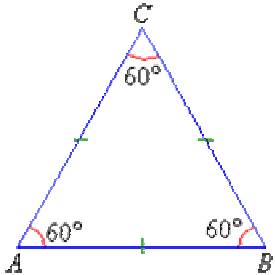
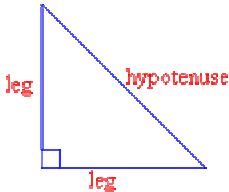
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 6**

**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
1. Identify types of quadrilaterals and their properties.	<ul style="list-style-type: none"> <li>• Quadrilaterals are polygons with four sides and four angles. Some common quadrilaterals and their properties are:               <ul style="list-style-type: none"> <li>a. <b>Square</b> :Four congruent sides and four right angles.</li> <li>b. <b>Rectangles</b> : Two pairs of congruent sides and four right angles.</li> <li>c. <b>Parallelograms</b>: Two pairs of congruent sides and two pairs of parallel sides.</li> <li>d. <b>Rhombus</b>: four congruent sides and two pairs of congruent angles.</li> <li>e. <b>Trapezoid</b>: exactly one pair of parallel sides.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Allow students to               <ul style="list-style-type: none"> <li>a. create models of quadrilaterals</li> <li>b. construct figures such as a building with various quadrilaterals.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pg. 450</li> <li>• Mathematics in Motion: A Resource Book for Primary Teachers, pg. 79</li> <li>• kwiznet.com</li> <li>• prometheanplanet.com</li> </ul>	<ul style="list-style-type: none"> <li>• Create models of quadrilateral with specific properties.</li> <li>• Complete test items.</li> </ul>
2. Classify and name triangles as scalene, isosceles, and equilateral (Continued).	<ul style="list-style-type: none"> <li>• Triangles can be classified by the length of their sides.</li> <li>• A scalene triangle has no congruent sides.</li> <li>• An isosceles triangle has two sides that are congruent.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students:               <ul style="list-style-type: none"> <li>(a) show examples of triangles by using grid paper.</li> <li>(b) examine flags of various countries and name the triangles on the flags.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk.5 pg. 446</li> <li>• aaamath.com</li> <li>• prometheanplanet.com</li> </ul>	<ul style="list-style-type: none"> <li>• Create songs to identify triangles and their properties.</li> <li>• Using a map of The Bahamas, students plot three trips to separate destination that form a triangle. Students identify the triangles that are formed by these trips (plots).</li> </ul>

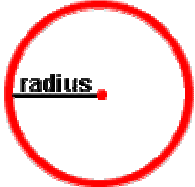
**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 6**

**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Classify and name triangles as scalene, isosceles, and equilateral.	<ul style="list-style-type: none"> <li>An equilateral triangle has all congruent sides.</li> </ul> 			
3. Classify and name triangles as right, acute, and obtuse (Continued).	<ul style="list-style-type: none"> <li>Triangles can be classified by the measures of their angles.</li> <li>A triangle that has a right angle (<math>90^\circ</math>) is a <b>right angle triangle</b>. The hypotenuse is the side opposite the right angle and is the longest side. The other sides are called legs.</li> </ul>  <ul style="list-style-type: none"> <li>An <b>acute triangle</b> has three acute angles. An acute angle is an angle measuring between 0 and 90 degrees (less than <math>90^\circ</math>).</li> </ul>	<ul style="list-style-type: none"> <li>Students create an electrical circuit board to match triangles and their properties.</li> <li>Students classify and name triangles formed by three points in their environment.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pg. 446</li> <li><a href="http://www.swego.org">http://www.swego.org</a></li> <li><a href="http://promethaeplanet.com">http://promethaeplanet.com</a></li> </ul>	<ul style="list-style-type: none"> <li>Match triangles and their properties.</li> <li>Create songs and poems about triangles.</li> </ul>


**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 6**

**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
3. Classify and name triangles as right, acute, and obtuse.	<ul style="list-style-type: none"> <li>An <b>obtuse triangle</b> has one obtuse angle. An obtuse angle measures between <math>90^\circ</math> and <math>180^\circ</math> degrees.</li> </ul>			<ul style="list-style-type: none"> <li>Create and highlight parts of a circle.</li> <li>Write in mathematics journal how to classify the various triangles.</li> </ul>
4. Find the lines of symmetry in polygons.	<ul style="list-style-type: none"> <li>A polygon has a line symmetry if it can be reflected on a line so that the two parts are congruent.</li> </ul>	<ul style="list-style-type: none"> <li>Allow students to use grid paper to determine if polygons have line symmetry.               <ol style="list-style-type: none"> <li>Fold the figures in half in various ways.</li> <li>Highlight lines that prove the figure is symmetrical.</li> </ol> <p><b>Use miras to justify symmetrical figures.</b></p> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pg. 438</li> <li>linkslearning.org</li> <li>prometheanplanet.com</li> <li>mira</li> </ul>	<ul style="list-style-type: none"> <li>Draw polygons and highlight lines of symmetry.</li> <li>Have students make a scrapbook showing the lines of symmetry of various polygons.</li> </ul>
5. Identify parts of a circle: <ul style="list-style-type: none"> <li>Centre</li> <li>Radius</li> <li>Diameter</li> <li>Circumference.</li> </ul>	<ul style="list-style-type: none"> <li>A circle is a closed plane figure with all points the same distance from the centre point. It has no beginning point and no end point.</li> <li>The radius is a line segment that connects the centre with a point on the circle.</li> </ul> 	<ul style="list-style-type: none"> <li>Using a cake, place an M &amp; M at the centre of the cake.               <ol style="list-style-type: none"> <li>Use white icing to highlight the circumference.</li> <li>Use colored sprinkles (candies) to show the diameter. A row of gummy bears can represent the radius.</li> </ol> </li> <li>In pairs, students create riddles about parts of a circle.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pg. 432</li> <li>helpingwithmath.com</li> <li>prometheanplanet.com</li> <li>Mathematics in Motion: A Resource Book for Elementary Teachers, pg. 90</li> </ul>	<ul style="list-style-type: none"> <li>Create a chart highlight parts of a circle.</li> <li>Write in mathematics journals their favorite part of the circle and explain why they have selected the part.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 6**

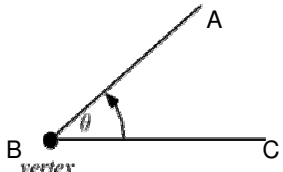
**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
	<ul style="list-style-type: none"> <li>The diameter is a chord that passes through the centre of the circle.</li> </ul>  <ul style="list-style-type: none"> <li>The circumference is the distance around the circle.</li> </ul>			
<p>6. Identify motions of transformation as translation, reflection, or rotation.</p>	<ul style="list-style-type: none"> <li>Motions, movement, or rigid transformations do not change the size or shape of a figure, only its position.</li> <li>Slides or translation is the movement of a figure along a straight line.</li> <li>Flip or reflection is the movement of a figure over a line.</li> <li>Turn or rotation is the movement of a figure around a vertex or point of rotation.</li> </ul>	<ul style="list-style-type: none"> <li>Have students use graph paper to show types of transformations. Using graph paper have students:               <ol style="list-style-type: none"> <li>draw coordinate planes</li> <li>graph specific points and connect them to form intended figures.</li> <li>trace the figure on a sheet of paper and cut it out.</li> <li>place the cut out figure on the figure draw on the co-ordinate plane.</li> <li>translate, reflect, or rotate the cut out figure.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pg. 452</li> <li>Math Advantage Bk.6 pg. 522</li> <li>edhelper.com</li> <li>prometheanplanet.com</li> </ul>	<ul style="list-style-type: none"> <li>Display examples of transformations using objects.</li> <li>Participate in a debate: Which transformation is best?</li> </ul>



**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: GEOMETRY  
GRADE: 6**

**Sub-Goal 5:** Use geometric methods to analyze, categorize, and draw conclusions about points, lines, planes, and space.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
<p>7. Identify angles through estimation and measurement as acute, obtuse, or right.</p>	<ul style="list-style-type: none"> <li>• An angle is formed by two rays with the same end point.</li> <li>• Angles can be named by three letters: - a point from each side and the vertex as the middle letter. They can also be named by a single letter, their vertices.</li> </ul>  <p style="text-align: center;"><small>vertex</small></p> <ul style="list-style-type: none"> <li>• Angles can be different sizes. <ul style="list-style-type: none"> <li>a. An acute angle is greater than 0 and less than 90°.</li> <li>b. An obtuse angle is greater than 90° and less than 180°.</li> <li>c. A right angle measures 90°.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Students create models that can be used to show types of angles. For example: <ul style="list-style-type: none"> <li>a. Guide students to join two drinking straws by inserting the twister from a sandwich/ bread bag into one of the ends of each straw. This model can be bent to form any angle.</li> <li>b. Have student estimate the setting for specific degree settings and check their estimates by measuring with a protractor.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pg. 422</li> <li>• Mathematics in Motion: A Resource Book for Primary Teachers, pg. 82</li> </ul>	<ul style="list-style-type: none"> <li>• Make models using toothpicks</li> </ul>

**SCOPE OF WORK SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: STATISTICS AND PROBABILITY  
GRADE: 6**

**Sub-Goal 6:** Collect, organize; and analyze data using statistical methods: predict results; and interpret uncertainty using concepts of probability

**Essential Questions**

1. Why are graphs important?
2. What are some ways to collect data for graphs?
3. How does the type of data influence the choice of graph?
4. How can the mean, median, mode, and range be used to describe the shape of the data?
5. How can the mean, median, and mode be computed and compared?
6. What is probability?
7. How is the probability of an event determined and described?

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: STATISTICS AND PROBABILITY  
GRADE: 6**

**Sub-Goal 6:** Collect, organize; and analyze data using statistical methods: predict results; and interpret uncertainty using concepts of probability.

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
1. Identify the type of graph (s) most suitable for displaying a given set of data.	<ul style="list-style-type: none"> <li>• A <b>graph</b> is a table that displays data.</li> <li>• <b>Pictographs</b> display countable data with symbols or pictures. They have a key to show that each picture represents a specific amount.</li> <li>• <b>Bar graphs</b> display countable data with horizontal or vertical bars. They allow you to compare facts about groups of data.</li> <li>• <b>Line graphs</b> show how data change over time.</li> <li>• <b>Circle graphs</b> show how parts of data are related to the whole and to each other.</li> <li>• Compare and contrast types of graphs.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students collect data from local media sources. Students will create displays to show the kinds of graphs used to display the data.</li> <li>• Have students create and manipulate pieces for concentration game. Students will use pictures of graphs, definitions, and specific data to create questions and answers.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. pg.112</li> <li>• Math Advantage Bk. 6 pg. 240</li> <li>• envision Math Bk. 5 pgs 432-449</li> </ul>	<ul style="list-style-type: none"> <li>• Lesson quiz: Present students with sets of data. Have them tell the most suitable graph to use to display the data.</li> <li>• Have students create a crossword puzzle using names of graphs and their specific characteristics.</li> </ul>
2. Collect, organize, graph, and analyze a set of data as the answer to a question or problem (Continued)..	<ul style="list-style-type: none"> <li>• There are many methods for collecting data. In some cases, it will already be recorded, and you merely need to "find" it. In other cases, you will need to construct a test, survey or other instrument to obtain the information you need.</li> <li>• A survey is a question, or questions, used to gather information called data.</li> <li>• A graph has a title and is always labeled.</li> </ul>	<ul style="list-style-type: none"> <li>• Have students work in groups:               <ol style="list-style-type: none"> <li>a. Survey “n” number of students with the focus question: Which of the following summer activities do you prefer? swimming, camping, watching T.V, bike riding or traveling</li> <li>b. Graph the data</li> <li>c. Create questions and answer keys</li> <li>d. Exchange completed projects among peers to provide answers for other assignments.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Math Advantage Bk. 6 pg.C52</li> </ul>	<ul style="list-style-type: none"> <li>• Students will create a display of their graphs.</li> <li>• Have students create a booklet to outline procedure and outcomes of data.</li> </ul>

**SCOPE OF WORK**  
**PRIMARY SCHOOL MATHEMATICS**  
**STRAND: STATISTICS AND PROBABILITY**  
**GRADE: 6**

**Sub-Goal 6:** Collect, organize; and analyze data using statistical methods: predict results; and interpret uncertainty using concepts of probability

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
2. Collect, organize, graph, and analyze a set of data as the answer to a question or problem.		<ul style="list-style-type: none"> <li>Have students create a picture puzzle. The pieces will be used to sequence the events of collecting, organizing, graphing, and analyzing data.</li> </ul>		
3. Interpret circle graphs	<ul style="list-style-type: none"> <li>A <b>circle graph</b> is a graph that shows how parts of the data are related to the whole and to each other. Each part is known as a sector.</li> </ul>	<ul style="list-style-type: none"> <li>Guide students to create circle graphs to show:               <ol style="list-style-type: none"> <li>their study schedule</li> <li>how they spend a school day.</li> </ol>               *Students will create questions and answers for the graphs             </li> <li>Have students create a bulletin board display.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk.5 pgs. 113, 245</li> <li>enVisionMath Bk. 5. pgs.446-449</li> </ul>	<ul style="list-style-type: none"> <li>Write in mathematics journals explaining what circle graphs are and how to interpret them.</li> <li>Lesson quiz: Have students complete test items by answering questions based on circle graphs.</li> </ul>
4. Solve problems involving mean, median, mode and range	<ul style="list-style-type: none"> <li><b>Mean</b> is the sum of all the numbers in a set of data divided by the number of addends.  <b>Example:</b> <math>95 + 87 + 84 + 61 + 83 = 430</math>  <math>430 \div 5 = 86</math></li> <li><b>Median</b> is the middle number in a set of data that are arranged in order.</li> <li><b>Mode</b> is the number or numbers that occur most often in a set of data. There may be one mode, more than one mode, or no mode</li> <li><b>Range</b> is the difference between the greatest and least number in a set of data.</li> </ul>	<ul style="list-style-type: none"> <li>Guide students to               <ol style="list-style-type: none"> <li>use “n” number of persons to measure the following:                   <ul style="list-style-type: none"> <li>Heights</li> <li>Weights</li> </ul> </li> <li>Find the mean, median, mode and range of the heights and weights of students in the class.</li> </ol> </li> <li>Create a chant/rap to assist with finding the mean, median, mode and range.</li> </ul>	<ul style="list-style-type: none"> <li>Harcourt Math Bk. 5 pgs.102, 106, 108</li> <li>Math Advantage Bk. 6 pg. 258, C54</li> <li>Bright Sparks Bk. 6 pg. 60</li> <li>www.promethianboard.com</li> </ul>	<ul style="list-style-type: none"> <li>Lesson quiz: Students will solve problems to identify mean, median, mode, and range.</li> <li>Create a chart to display mean, median, mode, and range of a specific set of data.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: STATISTICS AND PROBABILITY  
GRADE: 6**

**Sub-Goal 6:** Collect, organize; and analyze data using statistical methods: predict results; and interpret uncertainty using concepts of probability

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
5. Verify the probability of a particular outcome and write it as a fraction or ratio.	<ul style="list-style-type: none"> <li>• <b>Probability</b> is the chance that an event will happen. It compares the number of favourable outcomes and the number of possible outcomes.</li> <li>• Probability = <math>\frac{\text{number of favourable outcomes}}{\text{total number of possible outcomes}}</math> of an event</li> </ul> <p><b>Example:</b> Fraction <math>\frac{2}{3}</math>; ratio = 2 to 3 or 2:3</p> <p>Reuben writes each letter of his name on a separate piece of paper and puts them in a bag. He chooses one piece of paper from the bag without looking. What is the probability that Reuben will choose the letter B?</p> <p>There is 1 favourable outcome out of 6 possible outcomes, R E U B E N. The outcomes are equally likely. The probability of choosing the letter B is <math>\frac{1}{6}</math> or 1 to 6 or 1:6</p> <ul style="list-style-type: none"> <li>• A tree diagram is a diagram used to organize outcomes of an experiment.</li> </ul>	<ul style="list-style-type: none"> <li>• Guide students to create spinners with topics that interest them. E.g. Name brand shoes, favorite singers, words, restaurant names.</li> <li>• Allow students to: <ul style="list-style-type: none"> <li>a. create and solve questions/answer keys</li> <li>b. exchange problems among peers and provide answers</li> </ul> </li> <li>• Have students compete under timed conditions to write probability outcomes as fractions and ratios.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math Bk. 5 pg.</li> <li>• Math Advantage Bk. 6 pg. 272</li> <li>• enVisionMath Bk. 5. pgs.488-489</li> </ul>	<ul style="list-style-type: none"> <li>• Students create questions, conduct experiments, and record answers.</li> <li>• Create picture booklets to show outcomes.</li> </ul>
6. Use probability to make reasonable predictions. - tells what could happen because outcomes are likely to occur.	<ul style="list-style-type: none"> <li>• A reasonable prediction is one that indicates what could happen based on specific conditions.</li> <li>• Using probability to make reasonable predictions must include all possible outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>• Lead students to create a Silly Billy booklet that answers questions such as the following: Rashad says to Billy “The probability of rolling a 6 with a die is 1 to 6.</li> </ul>	<ul style="list-style-type: none"> <li>• Harcourt Math 5 pg.578</li> </ul>	<ul style="list-style-type: none"> <li>• Write an advice column about playing Silly Billy.</li> <li>• Have students provide reports to explain why predictions are logical or illogical.</li> </ul>

**SCOPE OF WORK  
PRIMARY SCHOOL MATHEMATICS  
STRAND: PROBABILITY AND STATISTICS  
GRADE: 6**

**Sub-Goal 6:** Collect, organize; and analyze data using statistical methods: predict results; and interpret uncertainty using concepts of probability

OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	ASSESSMENT
6. Use probability to make reasonable predictions (Continued). - tells what could happen because outcomes are likely to occur.		<ul style="list-style-type: none"> <li>• Roll the die. Whenever a 6 comes up, you win and Rashad will pay you \$5.00. Whenever a 6 doesn't come up, I win and you pay me \$5.00." Billy accepts the challenge. What do you think will happen and why?</li> <li>• Guide students to create a set of task cards with probability scenarios and at least two predictions of outcomes- one reasonable and the other unreasonable.</li> </ul>		
7. Describe a fair game	<ul style="list-style-type: none"> <li>• A fair game is one in which all players have an equal chance to win.</li> </ul>	<ul style="list-style-type: none"> <li>• Allow students to:               <ol style="list-style-type: none"> <li>a. play games and keep scores each time a player wins. At the end of 'n' games, students should justify why the game is fair/unfair.</li> <li>b. create a unique "fair game"</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• enVisionMath Bk. 5. pgs.492 &amp; 493</li> </ul>	<ul style="list-style-type: none"> <li>• Create a bookmark that outlines criteria for fair games.</li> <li>• Complete a paragraph to justify why their game is fair.</li> </ul>

# **Problems of the Day**

## **Primary School Mathematics**

### **Grade 4**

## PROBLEM OF THE DAY: GRADE 4

**Instructions:** The following can be read aloud or written and discussed with students.

1. How many 3-digit numbers can you make using the following digits: 3 6 8 5

**Answer: 24 numbers can be formed.**

2. How many 3- digit numbers can you make using the following digits: 7 4 6

**Answer: 6 numbers can be formed.**

3. Burger King sold 1,090,876 hamburgers. Wendy's sold 10,000 more than that. How many hamburgers did Wendy's sell?

**Answer: 1 100 876**

4. Mc Donald's sold 2,080,529 orders of French fries. Kentucky Fried sold 10,000 less than that. How many orders of fries did Kentucky Fried sell?

**Answer: 2 070 529**

5. Scott, Marcy, and Pedro set up chairs for the class play. Scott sets up 30 chairs. Marcy sets up 29 chairs. Pedro sets up 28 chairs. About 100 parents are expected. Do they have enough chairs? Explain.

**Answer: No. Explanations will vary.**

6. Earth is about 8 000 miles in diameter. The sun is about 93 000 000 miles away from Earth. About how many Earth's set side-by-side, would it take to equal the distance from Earth to the sun?

**Answer: 11 625**



7. Jesslyn has 2 bills with Sir Cecil Wallace Whitfield's picture, 5 coins with the starfish, 6 bills with the Royal Bahamas Police Force Band, 2 coins with the sailboat and 3 coins with the pineapple. How much money does Jesslyn have?

8. Which would you rather have and why: \$34.12 rounded to the nearest \$20.00, or \$34.12 rounded to the nearest \$10.00?

**Answer:** \$34.12 to the nearest 10 because it is more.

9. Jill wants to keep watermelons for the class picnic cold. How many watermelons can Jill fit in her refrigerator? Explain how you arrived at your answer.

**Answer:** Answers will vary. Students will need to make assumptions about size of watermelon and the size of refrigerator? And estimate.

10. This table shows bowling averages for a three- month period.

	Marie	John	Paul
January	187	151	139
February	198	163	147
March	211	182	161

a. If the bowler's averages were rounded to the nearest hundred, during which month could each bowler claim a 200 average?

**Answer: March**

11. Five addition facts have a sum of 4. Six addition facts have the sum of 5. How many addition facts have a sum of 6? List them.

12. How many raindrops make a puddle? Explain your strategy.

**Answer:** Answers will vary.

13. How many corn flakes can fit in a bowl? Explain your strategy.

**Answer:** Accept reasonable explanations.

14. In the game “Tic-Tac-Toe,” how many squares are on the Board? (The answer is not 9.)

**Answer:** 14

15. The fire station is 1 kilometer away from Princess Margaret Hospital. The police station is 1,000 meters from Princess Margaret Hospital. Which station is closer to Princess Margaret Hospital? How do you know?

**Answer:** They are equidistant. 1000 meters= 1 kilometer

16. The average field mouse is about 11cm long, not counting its tail. The average cat is about 45cm long, not counting its tail. What is the average of both animals?

**Answer:** 28 cm

17. Dairy Maid has half dozen flavors of ice cream. How many flavors are there? Show the different combinations of double scoop cones Dairy Maid can sell.

**Answer:** 6 flavors. Let students draw the combinations. Discuss whether 2 scoops of the same flavors count as a combination.

18. Estimate how many Cheerios in a box?

**Teacher’s note:** Change this to M & M’s in bag, raisins in a box, etc. for more Problems of the Day.

**Answer:** Accept all reasonable solutions and strategies.

19. Two sticks are each 9cm long. They are taped together to form a longer stick that is 12cm long. How long is the overlap?

**Answer:** 6 inches

20. A fly and a frog were hopping up a set of 12 steps. The fly landed on every 2<sup>nd</sup> step, and the frog landed on every 3<sup>rd</sup> step. Draw a diagram to find out on which steps they both landed. Start by drawing a staircase with 12 steps, or a ladder with 12 rungs.

**Answer:** Check all drawings. 6<sup>th</sup> and 12<sup>th</sup> steps.

21. In 1990, Jerome and his family visited the Pompey Museum in a building built 2 centuries earlier. About when was it built? If you need to, look up the word 'century' in the dictionary.

**Answer:** 1790

22. The Super Frosty at Wendy's costs \$12.45. Angie has \$8.50, Scott has \$9.25, and Devon has \$7.53. Do the three have enough money to share 2 Super Frostys?

**Answer:** Yes.

23. Twin Brothers sold 348 orders of Fish snacks and 400 orders of conch snacks. It also sold 598 chicken snacks. How many more orders of the fish and conch snacks than chicken snacks were sold?

**Answer:** 150

24. Chico used five squares to form a block letter T. If each square is 2cm long on a side, find the perimeter of the entire letter.

**Answer:** 24cm

25. Maria worked on her insect report for several days. On Monday she worked from 7:25 to 8:45. On Tuesday she worked from 4:20 to 5:05. On Wednesday she worked from 3:30 to 4:45 and from 7:20 to 8:00. How much time did she spend on her report in all?

**Answer:** 4hrs

26. The library checked out 114 books on Monday. 142 books on Tuesday and 129 books on Wednesday. The librarian reported to the principal that 405 books had been checked out in three days. Use estimation to decide if her report is reasonable.

**Answer:** Accept reasonable explanations

27. There were 2 dozen Chocolate cakes entered in the cake contest. There were twice as many Rum cakes and half as many Fruit Cakes. 15 Carrot Cakes and 1 Yellow Cake were also entered in the contest. How many cakes did the judges have to taste?

**Answer:** 100

28. In a recent local election, 8 254 people voted. 4 198 of them voted for one of the major 3 candidates. A fourth candidate got exactly 300 votes. About how many people voted for the fifth candidate? Can you tell who won?

**Answer:** 3 756. No.

29. Sarah has estimated that there are 20 weeks until the end of school. What month is it now?

**Answer:** January or February depending on when the last day of school is scheduled this year.

30. Tell which information is extra, then solve the problem: A chef can cook 8 hamburgers in 10 minutes. It takes him 15 minutes to cook 5 hotdogs. How many hamburgers can he cook in 20 minutes?

**Answer:** Extra information is about the hotdogs. 16 hamburgers.

31. Meecka found a treasure map with a graph but the treasure was not marked on the map. Instead there was a note saying: “(7, 9) is too far north; (1, 2) is too far west; (4, 5) is too far south; (6, 8) is too far east. It is north of (2, 6); it is east of (4, 9); and (3, 8) is too far north.” Can you name the location of the treasure for Meecka?

**Answer:** Have the students draw a coordinate plane to find the answer.

32. Josie’s ruler is 10 centimeters long. She uses it to measure a 3-meter-long piece of string. How many times must she move the ruler along the string?

**Answer:** 30

33. Pedigree is the only dog food Pierre the poodle will eat. It is sold in cartons that hold 6 servings. If Pierre eats 5 cartons a month, how many servings of Pedigree does he eat in a month?

**Answer:** 30

34. Sixty-four students and 8 adults went to a track meet. They rode in an Explorer that held the same number of people. If each adult drove an Explorer, how many people traveled in each Explorer? How many of them were students?

**Answer:** 9 people in each van, 1 adult and 8 students

35. Jenny is reading a local rainfall graph. The total rainfall for the months of April, May and June is 12cm. the total for January through June is 34cm. how much rain fell from January through March?

**Answer:** 22cm

36. Judy invited 20 friends to her birthday party. Then she went out and bought 20 party flavors. Now she found that 4 people can't come, and that 4 others are each bringing a cousin. Does she still have enough party flavors? Explain.

**Answer:** Yes.

37. Each day Mr. Franks makes 5 sandwiches for his family's lunch. Use 3 factors in a multiplication number sentence to show how many slices of bread he would use in 3 days. Solve the number sentence.

**Answer:**  $5 \times 3 \times 2 = 30$

38. Decide which operation to use to solve the problem, tell why, and solve the problem:

Zach started a collection of miniature cars from all over The Bahamas. He started with 6 Androsian cars. Then his pen pals in Exuma sent him 5 more cars. How many more does he need to have a total of 20 cars? How many cars does he have in his collection now?

**Answer:** Explanations will vary.

39. Find the secret number.

It is even. It is a multiple of 4. It is a factor of 32. It is greater than 4 but less than 10. What number is it?

**Answer:** 8

40. Last year, 4,000 people visited Grand Bahama in every month that had a "r" in it. Write a multiplication sentence to show how many visitors came to Grand Bahama in those months last year, and then find the answer.

**Answer:**  $4\ 000 \times 8 = 32\ 000$

41. There are some Hummers and some tricycles in a field. All together there are 55 wheels. How many Hummers and how many tricycles are there?

**Answer:** There are several solutions to this problem. Accept all that fit the conditions of the problem.

42. The carnival came to town for five shows. The first four shows were sold out, but only 707 people went to the last show. If the big tent had 965 seats, how many people saw the Carnival?

**Answer: 4 567**

43. The Pirate's of Nassau Museum gift shop sells a model of a pirate ship for \$25.79. If 8 models were sold last week, how much money was collected? If the gift shop paid the model factory \$15.79 for each model, how much profit did the gift shop make on the 8 sales?

**Answer: \$206.32; \$80.00**

44. Ms. Smith makes straw dolls of children, and she has received 50 orders for gifts. She is trying to get them finished in a month. After 2 days she has finished 3 dolls. After 4 days she has finished 3 dolls. After 4 days she has finished 6 dolls, and after 6 days she has finished 9. How many will she have done after 10 days? Make a table that shows the pattern and the answer. Will she finish the 50 in a month of 30 days?

**Answer: 15 days; check the tables; No.**

45. Draw a 3-by-3 square box around any 9 dates on a calendar. Find the sum of 3 numbers in a line. The line may be a horizontal, vertical or diagonal. Then multiply the middle number of your line by 3. What do you notice about the sum and the product?

**Answer: They are always equal.**

46. Ruby pays \$0.75 a day for lunch in the school cafeteria. How much does she spend on lunch each school week? How much does she spend in 8 school weeks?

**Answer: Accept all reasonable responses.**

47. Denise picked 2 dozen mangoes. If she uses 5 mangoes to bake a batch of mango cupcakes, how many batches can she make? How many mangoes, if any, will she have left?

**Answer: 4; 4 left over**

48. A Junior High Softball team plays 162 games during a regular season. A season lasts about 6 months. Use compatible numbers to estimate how many games a team plays each month. Explain whether the estimate is greater or less than the exact answer.

**Answer:** Accept all reasonable solutions

49. Each of the 6 cars of the Car Racing at the Sports Center can hold 8 riders. How many riders can the Car Racing hold at once? If 216 people buy tickets to ride the Car Racing, how many cars could they fill?

**Answer:** 48; 27

50. The Bamboo Shack orders juice in 2-gallon jugs. One gallon is equal to 128 ounces. Last week they used up 3 jugs of apple juice. If a serving of apple juice is 6 ounces, how many servings were sold from the total quantity of apple juice?

**Answer:** 64

51. To solve this problem, draw a picture that shows the chickens in the right order, and then label the chickens. Five chickens are flapping in a circle. Alexander is wearing a hat. Alexander is between Barraterre and Curtis. Curtis is followed by Forest. One chicken is named Georgetown.

**Answer:** check pictures with information in the story.

52. In football, a touchdown is worth 6 points. A safety is worth 2 points. The Bahamas Blue Marlin scored 36 points on some touchdowns and at least 1 but fewer than 6 safeties. What combination of touchdowns and safeties did the team score? Prove that your answer works.

**Answer:** 5 touchdowns, 3 safety

53. Issac practices the goatskin drums every day. Last week he spent a total of 224 minutes practicing and he played for the same amount of time each day. Did he practice more or less than a half hour each day? Explain your answer.

**Answer:** More. Accept reasonable explanations.

54. Suzy made 4 round-trips on the jitney last weekend to visit her grandfather in Doctor's Hospital. She spent \$5.20 for her total jitney fare. Explain how you could find the cost of a one-way jitney fare?

**Answer:** Accept reasonable explanations.

55. Use a calendar showing a complete month. Find the median of the dates in the first full week, from Sunday to Saturday. Then find the average of the dates in the next full week. What do you notice?

**Answer:** The median and mean of a week's dates are equal.

56. I am a capital letter made of 3 line segments. Two of my lines are equal and parallel. My third segment is shorter and intersects both parallel line segments. What letter am I?

**Answer:** H

57. An architect is planning a new house. She wants the front of the house to have a vertical line of symmetry. The front of the house must have one door and five windows. The shapes have yet to be chosen. Sketch how you think the front of the house should look.

**Answer:** Accept all drawings that fit the criteria in the problem.

58. A track field is 100 meters long. A crayon is 1 cm long. How many crayons fit end-to-end down the field? If crayons come 8 to a box, how many boxes would you need to try this experiment?

**Answer:** Let students use calculators; 910 crayons; 114 boxes.

59. Paul notices at least five different geometric figures in the playground at school. What items can you find in your school yard that are in the shape of 5 different geometric figures?

**Answer:** Answers will vary



60. Use the clues to draw a simple map of 4 straight streets in Danny's neighborhood. Danny lives on Meadow Street, which runs east to west. It is parallel to Meeting Street. Augusta Street is perpendicular to both streets. Dumping Ground Corner intersects Meadow Street and Augusta Street, but it does not meet Poinciana Drive.

**Answer:** Check the maps

61. Nancy, Jane and Brent have a total of 80 marbles in their collections. The total number of marbles that Nancy and Brent have equals the number that Jane has. Jane has 4 times as many as Brent. How many marbles does each person have?

**Answer:** Nancy 30; Jane 40; Brent 10

62. Donna, Dawn and Doug live with their parents, Denise and Dwayne Davis and their dog, Digit. What fraction are females? What fractions are adults? What fractions are children?

**Answer:** Answers depend on how students classify Digit.

63. Fanny loves freshly squeezed dilly juice. She has learned that it takes the juice of 15 dilly halves to serve the 3 members of her family. How many dillies is this?

**Answer:**  $7\frac{1}{2}$

64. Quinn talked on the phone to his best friend for  $\frac{4}{6}$  hour. Next, he and his grandfather spoke for  $\frac{1}{6}$  hour. Then he chatted with his sister for another  $\frac{1}{6}$  hour. How many minutes did he spend on the phone?

**Answer:** 60 minutes or 1 hour

65. A bed frame is 4m long and 3m wide. Each side of the bed is 1 ft. shorter than the frame. The springs that connect the bed to the frame fill that space. What is the perimeter of the frame? What are the perimeter and area of the bed? Can you find the area of the frame? Explain

**Answer:** 14cm (perimeter);  $12\text{cm}^2$  (area).

66. A D. J. Counselor's concert lasted 48 minutes. Write the length of the concert as a fraction of an hour. Then rewrite the fraction in simplest form.

**Answer:**  $48/60$ ;  $4/5$

67. Alan needs 5 pounds of flour for a pottery project. He finds three partially filled bags of flour. They contain  $2\frac{1}{4}$  pound and  $1\frac{3}{4}$  pounds. Does Alan have enough flour for the project?

**Answer:** No

68. Gayle did warm-up stretches for  $2/12$  hour. Then she did sit-ups for  $1/12$  hour and jogged in place for  $3/12$  hour. For how many minutes did Gayle exercise?

**Answer:** 30 minutes

69. One morning 740 flamingoes landed on Lake Cunningham to feed. That afternoon 67 of the flamingoes flew away, but another 428 flamingoes arrived. How many flamingoes were now on Lake Cunningham?

**Answer:** 1,101

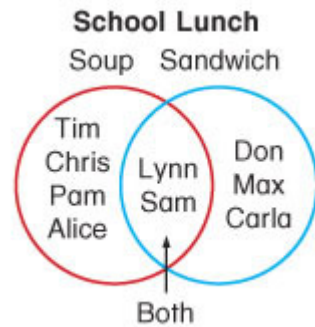
70. Using 4 fours and any combination of operations, write number sentences that equal 1,2,3,4 and 5.

**Answer:** Answers will vary. One possible answer is  $[(4 \times 4) \div 4] \div 4 = 1$

71. The new copy machine in the principal's office can copy a 100-page report in 2 minutes. How long will it take to copy 0.5 of the report?

**Answer:** 1 minute

72. **Anika** made the Venn diagram below to show what some children ate for lunch at a party. Did more children eat only soup or only sandwiches?



**Answer: Soup**

73. Draw a figure that has twice as many vertices as a triangle.

74. How many ninths equal  $\frac{1}{3}$ ?

**Answer: 3**

75. Deborah and her friends are painting. They each painted  $\frac{1}{8}$  of the painting. How many people make the painting altogether?

76. There are 7 marbles in a bag. Three of the marbles are blue, two are orange, and the rest are red. What is the ratio of red marbles?

- a. 3 out of 5    b. 2 out of 5    c. 2 out of 7    d. 3 out of 7 (Answer)

77. Wendell and Terry both rounded the number 3.4682. Wendell says that he rounded the number up. Terry says that he rounded the number down. To what place value might the number have been rounded by Wendell? By Terry? Explain.

78. If 5 times the first number plus three times the second number equals 47, and 10 times the first number minus 4 times the second number equals 54, what are the numbers?

**Answer: 7; 4**

79. If the ratio of Howard Stern fans to non-fans in a group is 4 to 1, what fraction of the people in the group are non-fans?

**Answer:  $\frac{1}{5}$**

80. Jenny wanted to purchase 2 dozen pencils and a pen. Those items cost \$8.45 and she did not have enough money. So she decided to purchase 8 fewer pencils and paid \$6.05. How much was a pen?

81. Bob, Keith, and Toi each have some money. The sum of Bob's and Keith's money is \$18.00. The sum of Keith's and Toi's money is \$21.00. The sum of Bob's and Toi's money is \$23.00. How much money does each person have?

**Answer:** Bob = \$10.00; Keith = \$8.00; Toi = \$13.00

82. What number comes next in the following sequence? 1, 1, 2, 3, 5, 8, \_\_\_?\_\_\_

**Answer:** 12, 17

83. Gary scored 7 foul shots out of every 10 attempts in a basketball game. How many foul shots did Gary miss in 20 attempts?

**Answer:** 14

84. Use both of these symbols to make the number sentence true: +, —.

$$2 \circ 4 \circ 2 \circ 3 \circ 5 = 10$$

**Answer:** +, +, -, +

85. Peter was running a race that was a distance of 1 kilometer. Rhonda outran him when Peter was only 1 meter away from the finish line. How far had Peter run when Rhonda won the race?

86. The sum of two numbers is 10. The product of the two numbers is 24. What are the numbers?

**Answers:** 6 and 4

87. The boys are playing a "blindfold" number game. Sam put his hand in a box and picked 3 successive numbers with a sum of 27. What numbers did Sam pick?

**Answer:** 8, 9, 10

88. Maria and Vanria like to read. Maria read 3 hours a day for 22 days. Vanria read 4 hours a day for 18 days. Who read for more hours?

**Answer:** Vanria

89. Patsy's grandmother lives 36 km from Patsy's home. Patsy goes two times a week with her family to visit her grandmother. How many km do they travel each week going to her grandmother's home and back?

**Answer:** 144 km

90. CeRon's bedtime was usually 9:30 p.m. The night he went to the basketball game, he was one hour and fifteen minutes late going to bed. What time did he go to bed? Write the answer two ways.

**Answer:** 10:45 p.m. or 15 (quarter) minutes to 11

91. Jermicia, Donald, John, and Simone are waiting in line to see a movie. Simone is between Jermicia and Donald. John is last in line. Jermicia is not first in line. John is next to Jermicia. Donald is not second in line. In what order are they standing?

92. There are 16 softball team members and two coaches in the dugout. If nine players go onto the field, how many people are still in the dugout?

**Answer:** 9

93. It takes Betsy 25 minutes to walk home. She leaves school at 3:15 p.m. What time does she get home?

**Answer:** 3:40 p.m.

94. Jim drove 768 miles of a 1200 miles journey. How many more miles does he need to drive to finish his journey?

**Answer:** 432 miles

95. Each of the four shapes below contains one of the numbers 3, 4, 6, or 8. The number inside each shape does *not* match the number of its sides. The number in the circle is odd. The number inside the triangle is the greatest. Which shapes contain which numbers?



**Answer:** Circle 3, triangle 8

96. Jim built pens for his dogs. If he puts 1 dog in each pen, he will have 2 dogs left over. If he puts 2 dogs in each pen, he will have 1 empty pen. How many dogs and pens does Jim have?

97. What single digit number can you multiply by 4, subtract 3, divide by 5, and add 2 to arrive at the same number that you started with?

**Answer: 7**

98. The sum of the digits in the month, day, and year for Steve's birthday is 26. If he was born in 1990, in what months could he not have been born?

99. Ellen works 5 days a week for \$9 an hour. How much does she earn in a week?

**Answer: \$45.00**

100. Mrs. Johnson has 24 students in her fifth grade class. For every 5 girls in the class there are 3 boys. How many boys are in the class?

**Answer: 9**

# **Problems of the Day**

## **Primary School Mathematics**

### **Grade 5**

**PROBLEM OF THE DAY: GRADE 5**

**Instructions:** The following can be read aloud or written and discussed with students

1. Kenneth and Jan live on a straight road exactly 5 miles apart. One day, Kenneth rides his bike 3 miles toward Jan's house. At the same time, Jan rides her bike 1 mile toward Kenneth's house. They are now exactly 4 miles apart. What's wrong with the last statement?

**Answer:** They will be 1 mile apart. Draw a picture to help.

2. Cars are lined up in this pattern: black, black, red, black, black, red. If this pattern continues, what will be the color of the thirty-fourth car? How did you arrive at your answer?

**Answer:** Black. Strategies will vary

3. The range of four numbers is 12. Three of the numbers are 28, 35, and 37. What is the fourth number?

**Answer:** 25 or 40

4. Jason used 6 rolls of film to take 120 photos of animals at the Ardastra Garden. Some rolls of film had 12 exposures on each roll; others had 24 exposures. If all of the film were used, how many rolls of each kind of film did Jason use?

**Answer:** 2 rolls of 12 exposures; 4 rolls of 24 exposures

5. Jeannie was collecting money to help clean up the Humane Society animal shelter. She collected \$165 and had 18 bills. What combination of bills might she have collected?

**Answer:** Answers may vary. One possible solution is 2-twenties, 9-tens & 7-fives.

6. Matthew is 8 years old, and Joanna is 6 years younger. How old will Matthew be when he is twice as old as Joanna?

**Answer:** Matthew will be 12.



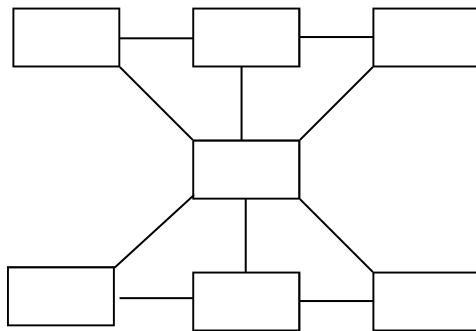
7. A goat's owner receives \$1 000 for appearing on ZNS-TV and \$500 for starring in commercials. In one month the goat performed just seven times and earned \$4,500! Exactly how many times was the goat on ZNS? And, how many commercials was the goat in during the month?

**Answer:** 2 times on ZNS; 5 times in commercials.

8. A grade five class held a catching crab contest. Admission prices were \$0.50 for students and \$1.00 for adults. After the first half-hour, the class had \$20 in the cash box. How many students and how many adults might have bought a ticket?

**Answer:** Accept all answers that equal \$20.00 worth of tickets because there are several correct answers.

9. Place the number 1 through 7 in the boxes so the sum of any three boxes in a straight or diagonal line is 12. Use each number only once.



**Answer:** 1, 5, 6  
4  
2, 3, 7

10. The floor in The Poop Deck Restaurant needs new tiles. The floor measures 36 by 42 feet. Tiles that are 1 foot by 1 foot cost \$0.92 each. A box of 500 tiles is \$450. What combination of boxes and single tiles should the restaurant buy to get the lowest cost?

**Answer:** 3 boxes and 12 single tiles.

11. Forty-eight goldfish were in tanks. Each tank held either six or eight fish. All the tanks were full. How many fish were in each tank?

**Answer:** Answer will vary.

12. Use the rule below. Choose any three inputs. What are the outputs? Tell what happens when you multiply and divide by the same number. Rule: Input  $\times 6 \div 6 =$  output

**Answer:** The division reverses the multiplication and the input = out put.

13. In each riddle, the answer is one more different whole numbers. Use the clues to find each mystery number.

- a. Clue: I am less than 100.  
Clue: The sum of my digits is 4.  
Clue: If you divide me by 2, you get an odd number. I am the number\_\_\_\_\_

**Answer:** 22

- b. Clue: If multiplied by 2, I become a number greater than 20 and less than 40.  
Clue: If multiplied by 6, I end in 8.  
Clue: If multiplied by 4, I end In 2. I am the number\_\_\_\_\_

**Answer:** 13 or 18

14. Marco wanted to put three 3-foot shelves over his desk. He bought a 9-foot board and had it cut into three equal pieces. Kelly's Lumber Yard charged \$1.50 per foot for the board, and \$0.50 for each cut. Marco received this bill and was upset. He said he was charged too much. What's wrong? Kelly's Lumber Yard

ITEM	COST
9-ft.board	\$13.50
3 cuts at \$0.50 each	1.50
<b>Total</b>	<b>\$15.00</b>

**Answer:** He only needed 2 cuts to get 3 pieces.

15. It took the Millers 20 minutes to drive from the villa in Eleuthera to the beach. They stayed on the beach for 2 hours. They spent another 20 minutes driving back to the villa. They arrived back at 4:40pm. What time did they leave for the beach?

**Answer:** 2:00pm

16. The Rolles and their 3 children bought postcards to send to their friends and relatives from Eleuthera. Mr. and Mrs. Rolle sent 8 postcards. The children sent 2 postcards each. They have 4 postcards left. How many postcards did they buy?

**Answer:** 18 postcards

17. Mr. and Mrs. Johnson and their three children visited a straw market. They spent \$15.00 on souvenirs, \$25.75 for lunch and \$8.00 on the adult coconut water. If they spent a total of \$56.25 at the straw market, what did they spend on the children's strawberry daiquiri?

**Answer:** \$7.50 (\$2.50 per child)

18. While in Eleuthera, Mr. Rolle filled his empty gas tank with 20 gallons of gas. He drove a total of 250 miles and then bought 10 gallons of gas to fill his tank. How many miles per gallon does he get?

**Answer:** 25 mpg

19. In Acklins, a grade five class of 25 students collected bottles to turn in for a \$0.05 deposit on each. If they got \$17.50, what is the average number of bottles each student collected?

**Answer:** 14 bottles

20. How many edges does a rectangular prism have?

- a. 12
- b. 8
- c. 6

**Answer:** 12

21. Mrs. Smith lives in Abaco and is planning a 500-mile trip. Her car gets 29 miles per gallon. Can she make the trip on 17 gallons of gas? Explain.

**Answer:** No, she will run out of gas at 493 miles.

22. Craig bought some crushed ice for \$1.75. Then he spent twice as much on snacks. If Craig had \$5.62 left, how much money did he have before buying the ice and snacks?

**Answer:** \$10.87

23. Lillymae leaves the playground and walks 120 metres west. Then she walks 40 metres north. After that, she walks 50 metres east and then 40 metres south. Where is she now?

**Answer:** 70 metres west of where she started.

24. The caterer suggests ordering twice as many paper napkins as the number of guests expected. The napkins come in packs of 100, 50 and 25. Based on the suggestion, how many napkins will be needed for 172 guests? What combination of packs should be ordered?

**Answer:** 344 napkins. Accept any reasonable combination.

25. When Keisha divided 1 954 by 19, she got an incorrect answer of 12 R16. Why is her answer not reasonable? What is the correct answer? What did Keisha do wrong?

**Answer:** Accept all reasonable explanations.

26. Bethel Baptist Church plans to serve Christmas dinner to 624 senior citizens. The chefs plan to have one pound of turkey for every 2 guests. If they purchase 24-pound turkeys, how many do they need?

**Answer:** 13 turkeys

27. You measure an angle to be 60. Your classmate uses the same protractor and thinks the angle is 120. What is wrong with one of the measurements?

**Answer:** Student is reading the incorrect number used for obtuse angles.

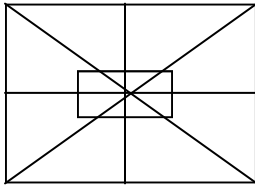
28. Can a triangle be an acute triangle and also a scalene triangle? A right angle triangle and also an isosceles triangle? Why or why not?

**Answer:** Yes, explanations will vary.

29. A square, a rectangle, a trapezoid and triangle were used in a sketch of a building. The square is above the rectangle and below the triangle. The trapezoid is below the triangle and above the square. What is the order of the figures from top to bottom?

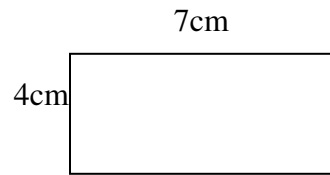
**Answer:** Rectangle, square, trapezoid, triangle.

30. Look at the drawing below. How many quadrilaterals can you find? How many triangles?



**Answer:** 26 quadrilaterals; 32 triangles

31. Find the area of the figure.



32. A. Batelco uses capital letters as designs on the tags of their key chains. Which letters of the alphabet are symmetrical? Which letter has the most lines of symmetry?  
B. Draw your own symmetrical design. The design could represent a junkanoo shack, a club, a company, or just an interesting pattern. Show the lines of symmetry.

**Answer:** (A) The letter O has the most lines of symmetry. (B) Designs will vary.

33. The first time the carnival juggler appears, he juggles two balls; the second time, four balls; and the third time, six balls. If this pattern continues, how many balls will he juggle the fifth time?

**Answer:** 10

34. Square boxes 3 cm on each side are packed in a larger box 24cm on each side. How many small boxes can be packed on the bottom layer of the box?

**Answer:** 64

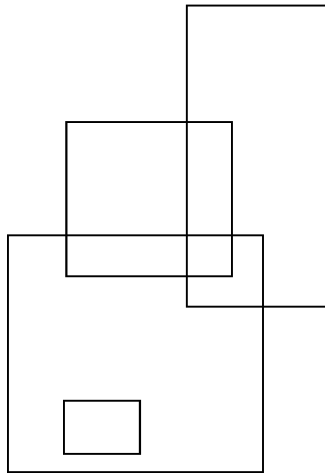
35. Carol wants to put a sea grape leaf with a diameter of 10 inches into the box shown. Will the sea grape leaf fit?

**Answer:** No. Diameter is longer than the width of the box.

36. You want to stack three circular puzzle boxes in a cardboard carton 10 in. wide, 10 in. long and 4 in. high. Each puzzle box is 8 in. in diameter and 2 in. thick. Will the boxes fit? Tell why or why not.

**Answer:** No because the carton is only 4 inches high and the 3 puzzle boxes will be six inches high.

37. How many rectangles are there? Hint! Remember that a square is a special rectangle.

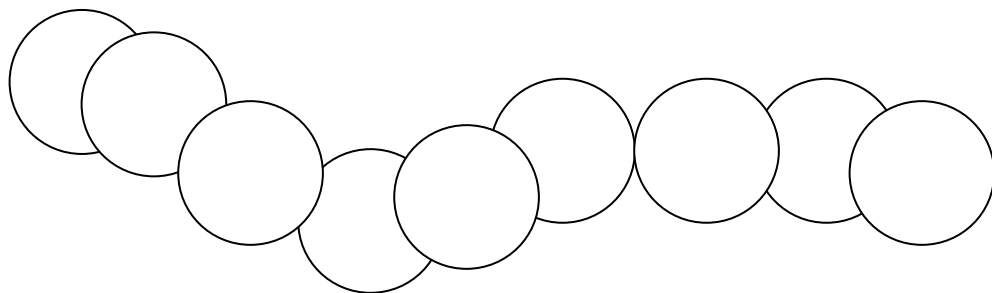


**Answer:** 13 rectangles

38. The brass section in the Royal Bahamas Police Force Band is arranged in a 5 by 11 rectangular array. Is the total number of brass players a prime or composite number? Explain

**Answer:** 55-composite

39. Copy the drawings below on a sheet of paper. Place the numbers 1-9 in each of the nine sections so that the sum of the numbers in each pair of circles is 20. Use each number only once.



**Answer:** Tell what strategy you used

40. Andy deposited one hundred twenty-seven thousand, eight hundred fifty-nine dollars into an account. The account was credited with the amount written in reverse. How much was credited to Andy's account?

**Answer:** 958 721

41. Outside of Adelaide Primary School there were 7 bicycles and tricycles. There were 18 wheels altogether. How many were bicycles and how many were tricycles?

**Answer:** 4 tricycles, 3 bicycles

42. It took 10 years for the Nassau Guardian to make 1 million dollars per year. Then the service's yearly earnings increased 10 times every 5 years. What would be their yearly earnings?

43. The brass **section** in the Royal Bahamas Police Force Band is arranged in a 5 by 11 rectangular array. Is the total number of brass players a prime or composite number? Explain

**Answer:** 55 Composite

44. A survey showed that 91 people watched ZNS from 7 o'clock to 8 o'clock. Also, 109 people watched JCN from 7 o'clock to 8 o'clock. Did more than half of the people surveyed watch ZNS from 7 o'clock to 8 o'clock? How do you know?

**Answer:** No, because 91 is less than half of 200

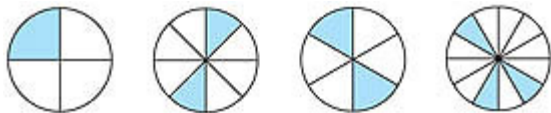
45. Renaldo has \$20. The price of a textbook he needs to buy rounds up to \$20. Does Renaldo have enough money to buy the textbook? Tell why or why not?

**Answer:** Accept all reasonable answers.

46. In the backyard there were some animals. Some were chickens and some pigs. Altogether there were 15 heads and 44 legs. How many chickens and how many pigs were in the backyard.

**Answer:** 7 pigs and 8 chickens

47. In which of the figures below is there the greatest probability that a dart landing inside the figure will land on a shaded area?



48. Willie's mother is 5 feet tall and his sister is 4 feet tall. His mother is taller than the hibiscus bush in the yard, but the bush is taller than his sister. Willie estimates that the height of the bush is between 4 feet and 5 feet. Is he correct? Why or why not?

**Answer:** Accept all reasonable explanations



49. What is 25?

**[Teacher's Note:** Students should answer this question in as many ways as possible such as: 25 is  $5 \times 5$  ; 25 is the date of Christmas ; 25 is  $20+5$  ; 25 is one less than 24]

Change the number to create another problem of the day.

50. Mrs. Davis is decorating a room for a party. She ordered a 100 cm length of crepe-paper streamers. Will she have enough streamers to decorate the room? Tell why or why not.

**Answer:** Accept all reasonable explanations

51. A farmer wanted to cross a lake in a dingy with a sheep, an iguana and a head of cabbage. The dingy could only hold two of them. The farmer could not leave the sheep with the cabbage because he would eat it. He could not leave the iguana with the sheep because the iguana would eat the sheep. How does the farmer get everyone across the lake?

52. What is the greatest possible number of zeros contained in a number that starts with a 5 in the thousands place and ends with a 5 in the thousandths place?

**Answer:** 5

53. Warren says that he estimated how much money he has in his bank account. His estimate is \$200.00. How much money could Warren have in his account exactly?

**Answer:** Accept all reasonable amounts that round to \$200.00

54. The Bahamas National Basketball League has 12 teams. If there are 9 players on each team, how many players belong to the league? How would you solve this problem if you did know the basic multiplication fact?

**Answer:** 108. Accept all reasonable explanations.

55. BEC charges \$.12.00 per Kilowatt-hour (kwh) of use. In one month, the Davis family used about 669 kwh of electricity. The Davis' are trying to estimate the cost of the electricity to record in their household budget. What is the greatest amount that might record as an estimate? How did you arrive at your estimate?

**Answer:** Accept reasonable explanations.

56. Brittney is making a pictograph to show the number of Family Island students in her high school. She has found that 71 students come from Abaco, 46 from Exuma, 103 from Grand Bahama, 19 from Acklins and 24 from Inagua. What value should she choose for the pictograph symbol? Explain your answer.

**Answer:** accept all reasonable explanations.

57. Aaron's parents promised that he could go to Adventure Learning Centre if his math average was at least 85. Aaron got these scores on math tests: 62, 81, 100 and 87. What score does Aaron need on his next math test to have an 85 average?

**Answer:** 100

58. Mrs. Ingraham has a set of wooden boxes that fit inside one another. The width of the smallest box is 2 cm. The width of the next box is 5 cm. The fourth box is 9 cm wide. What is the width of the fifth box? Describe the pattern. Tell how you used the pattern to solve the problem.

**Answer:** 17

59. Marcia bought some presents for Jill, Calvin and Sarah. She gave 4 to Jill and twice as many to Calvin. She gave the other half of her presents to Sarah. How many presents did she buy?

**Answer:** 24

60. Tracey bought 6 model planes at Kelly's. Each plane cost \$3.90. She gave the salesperson \$18.54. The salesperson told Tracey that she will owed \$4.86. What did Tracey do wrong?

**Answer:** She switched the 9 and 0 before she multiplied.

61. A recipe calls for 8 cups of dilly juice, 4 cups of guinep juice and 12 cups of pineapple juice to make a fruit punch. How many cups of dilly juice and pineapple juice should Evan use if he has only 1 cup of guinep juice?

**Answer:** Dilly Juice = 2    Pineapple Juice = 3

62. I am a closed-plane figure. I have straight sides. I do not have any right angles. None of my sides are the same length. I have fewer sides than a quadrilateral. What am I?

**Answer:** Scalene triangle

63. We are three numbers. Our least common multiple is 30. Our sum is 14. Who are we?

**Answer:** 3, 5, 6

64. Max weighs  $12\frac{1}{2}$  pounds more than his little sister. Max's little sister weighs  $14\frac{1}{2}$  pounds more than his baby brother. Max's baby brother weighs  $18\frac{1}{4}$ . How much does Max weigh?

**Answer:**  $45\frac{1}{4}$  pounds

65. Suppose one quarter of an athletic field is devoted to basketball. One half of the basketball section has lower baskets. Make a diagram to find what fraction of the athletic field has lower baskets.

**Answer:** Check all diagrams

66. Ed is building a picket fence. He needs 3 pickets for  $\frac{1}{4}$  of a section of the fence. The whole fence is 4 sections long. Make a diagram to find out how many pickets he needs.

**Answer:** Check all diagrams

67. Two groups in Ms. Jackson's class have been assigned to decorate the bulletin board. The groups have decided to divide the space diagonally. This creates two right triangles. The board measures 4 ft. high by 12 ft. long. How much space will each group have to decorate?

**Answer** 24 sq. ft.

68. 300 000 people live in New Providence. If they were standing in a line, holding hands with their arms outstretched about how many kilometers long would this line be?

**Answer:** Accept all reasonable solutions, not just answers

69. If you drew a dot in every square of a 25 x 40 grid every second for 24 hours a day and 365 days a year, would it take more or less than two years to draw 1 billion charts?

70. Hamblin volunteered to bring cupcakes for the class. His mother made 3 dozen cupcakes. Each of the 21 students ate a cupcake. Write an algebraic equation that shows how many cupcakes are left. Use C as the variable.

71. A student averages 72 on 5 different tests. If the lowest score is dropped, the average rises to 84. What is the lowest score?

**Answer:** The score removed to change the average from 72 to 84 is 24.

72. How many whole numbers between 100 and 300 contain the digit 3 exactly once?

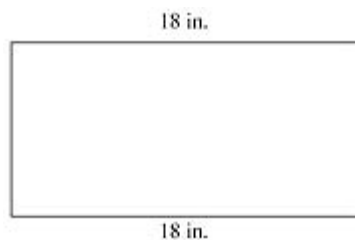
73. If 4 days ago was the day before Monday, what is tomorrow?

**Answer:** Monday

74. Nick plays for a hockey team. In his first 3 games he scores a total of 8 goals. He scores 1 less goal in the third game than in the second game. If he scored 3 goals in the third game, how many goals did he score in the first game?

**Answer:** 13

75. In the figure below, the smaller sides of the rectangle are half the length of the longer sides. What is the perimeter of the rectangle?



**Answer:** 54 ins.

76. The sum of the digits of a 4-digit number is 28. The digits are in order from greatest to least and are not repeated. What is the number?

**Answer:** 9 874

77. If a number is multiplied by 7, the product is 56. If you double the number and divide the result by 3, what is the remainder?

**Answer:** 1

78. How many  $\frac{1}{8}$  in. pieces can be cut from a length of pipe 16 ft long?

79. What part of a dollar is 2 quarters, 2 dimes, 1 nickel, and 2 pennies?

**Answer:**  $\frac{77}{100}$

80. What three consecutive numbers have a sum of 33?

**Answer:** 10, 11, 12

81. Norman buys baseball cards at 9 for \$10 and sells them at 6 for \$10. How many cards must he sell to make a profit of \$100?

**Answer:** 72

82. Find the next set of letters in the pattern: am, BN, co, DP, eq, ?

**Answer:** FR

83. Five girls ran in a race. Ellen came in behind Lita. Ruth was behind Ellen and Lita. Sally was between Ruth and Ellen. Nelda came in second. Who came in first?

84. Claudia divided \$1 521 between different charities. If she divided the money equally and gave to less than 8 charities, how many charities did Claudia give the money to?  
How much did she give each charity?

85. If you take a certain number, divide it by 4, add 14, multiply by 3, and subtract 5, the answer is 49. What is the number?

86. The figure below shows how three circles can be placed so that each circle intersects every other circle. Show how you can place four circles so that each circle intersects every other circle.



87. At a toy shop a bell rings every hour and 15 minutes, and a whistle blows every hour and 45 minutes. If the bell and whistle sound together at noon, when will they sound together again? the next time after that?

88. Your class raised some money for a field trip to Spanish Wells. The first week you raised \$9 less than the second week. The third week you raised half as much as the second week. The fourth week you raised \$5 more than the third week. If you raised \$30 the fourth week, how much did you raise the first week?

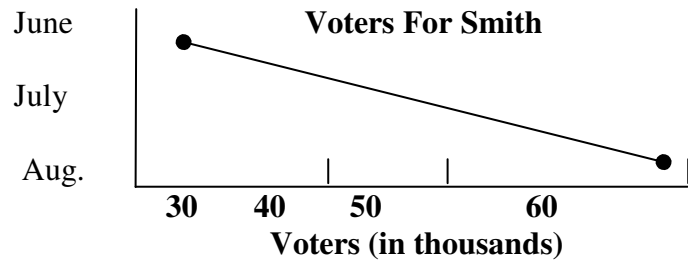
89. The caterer suggests ordering twice as many paper napkins as the number of guests expected. The napkins come in packs of 100, 50, and 25. Based on the suggestion, how many napkins will be needed for 172 guests? What combination of packs should be ordered?

**Answer:** 344 napkins. Accept any reasonable combination.

90. When Keisha divided 1 954 by 19, she got an incorrect answer of 12 R16. Why is her answer not reasonable? What is the correct answer? What did Keisha do wrong?

**Answer:** Accept all reasonable explanations.

91. Senator Dion Foukes saw this graph and thought that people did not like him. Is it true?



**Answer:** Accept all reasonable interpretation

92. How many addition signs should be put between digits of the number 987654321 and where should we put them to get a total of 99?

**Answer:** a.  $9 + 8 + 7 + 65 + 4 + 3 + 2 + 1 = 99$  (7 addition signs)    b.  $9 + 8 + 7 + 6 + 5 + 43 + 21 = 99$  (6 addition signs)

93. A man has to be at work by 9:00 a.m. and it takes him 15 minutes to get dressed, 20 minutes to eat and 35 minutes to walk to work. What time should he get up?

**Answer:** 7 hours + 120 minutes - 70 minutes = 7 hours and 50 minutes = 7:50 AM

94. If you begin with a one digit integer, multiply by 3, add 8, divide by 2 and subtract 6, you will get the integer back.

Find the number.

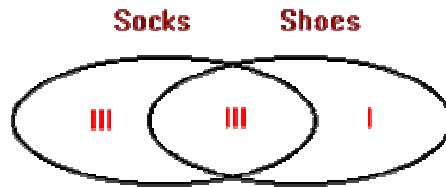
**Answer:**  $[(3 \cdot x + 8) / 2] - 6 = x$

95. Rachel opened her math book and found that the sum of the facing pages was 243. What pages did she open to?

**Answer:**  $243 / 2 = 121.5$

121.5 pages are whole numbers therefore the pages are 121 and 122

96. There are 12 people in a room. 6 people are wearing socks and 4 people are wearing shoes, 3 people are wearing both. How many people are in bare feet?



**Answer:**  $12 - 7 = 5$  people in bare feet

97. An ice cream stand has nine different flavours. A group of children come to the stand and each buys a double scoop cone with two flavours of ice cream. If none of the children choose the same combination of flavours, and every different combination of flavors is chosen, how many children are there?

#### FLAVOURS

- 1 Vanilla
- 2 Maple
- 3 Chocolate
- 4 Tiger
- 5 Raspberry
- 6 Strawberry
- 7 Coffee
- 8 Moon Mist
- 9 Cherry Vanilla

**Answer:**  $36 = 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1$  There are 36 children.

98. Super Value Food Store has a sale on bananas. If you buy six bananas you get the sale price. If the grocer has 489 bananas, how many bunches of six can he sell at his sale price? In this case how many can be sold at the regular price?

489 divided by 6 equals 81 with a remainder of 3

**Answer:** He can sell 81 bunches, which would leave him 3 to sell at regular price.



99. If a man can walk 4km in 1 hour and his wife can walk 5km in 1 hour, how many minutes will it take them to meet if they begin walking at the same time at opposite ends of a 12km road, and have agreed to meet at the half way point?



<b>Time for Man</b>	<b>Time for Wife</b>
6km / 4km/hr	6km / 5km/hr
=	=
$3/2 * 60\text{min}$	$6/5 * 60\text{min}$
=	=
90 minutes	72 minutes

**Answer:** As the woman will get there first, she will have to wait for the man. The time taken to meet will be 90 minutes.

100. A math student interviewed 50 fifth graders. 41 said they like peanut butter sandwiches, 35 liked jam sandwiches and 30 liked both on their sandwiches. How many students liked neither?

<b>Only Jam</b>	<b>Only Peanut Butter</b>	<b>Jam/Peanut Butter</b>
$35 - 30$	$41 - 30$	$30$
<b>5</b>	<b>11</b>	

**Answer:** Number that liked neither =  $50 - (5+11+30) = 4$

101. A line of length 4 is divided into nine equal segments. Find a fraction to describe the length AB.

length = 4



**Answer:**  $4 * 3/9 = 12/9 = 4/3 = AB$



# **Problems of the Day**

## **Primary School Mathematics**

### **Grade 6**

### PROBLEM OF THE DAY: GRADE 6

**Instructions:** The following can be read aloud or written and discussed with students.

1. Thomas paid \$7.00 for 8 conch shells. Small shells cost \$0.50 each. Large shells cost \$1.50 each. How many of each size did he buy?

**Answer:** 5 small and 3 large shells

2. A video titled *The Explorer's Guide to The Bahamas* is 35 minutes longer than *The Explorer's Guide to Mount Alvernia*. The combined running time of the videos is 2 hours 11 minutes. How long is each video?

**Answer:** Oceans 1 hour 23 min; Rivers, 48 min

3. Karyn paid \$27.00 for two books about hurricanes. The hardcover book cost three times as much as the paperback book. How much did each book cost?

**Answer:** Paperback, \$6.75; hardcover \$20.25

4. Ryan bought 27 seashells. He bought twice as many pieces of conch shells as he did sand dollars and 3 times as many pieces of star fish as he did conch shells. How many did he buy?

**Answer:** 3 sand dollars, 6 conch shells, and 18 starfish

5. Josie gave 12 conch shells from her collection to Andy. She then received 15 conch shells from Lisa and gave 24 to Sophia. She now has 62 conch shells. How many conch shells did she have originally?

**Answer:** 83

6. In the jewellery case, a necklace is displayed to the left of a bracelet and next to a ring. A watch is displayed to the right of the necklace but to the left of the bracelet. List the pieces of jewellery in order, from left to right, as they appear in the case.

**Answer:** sample answer; ring, necklace, watch, bracelet

7. Lauren received \$0.55 in change after buying 3 large Bahamian postcards at a cost of \$0.75 each and 4 small Bahamian postcards at a cost of \$0.55 each. How much money did she give the clerk?

**Answer:** \$5.50

8. In a display case, six rocks are arranged according to weight. The lightest rock weighs 3.4 oz, and the next rock weighs 4.5 oz. If the samples increase in weight by the same amount, what are the weights of the remaining rocks in the display?

**Answer:** 5.6 oz, 7.8 oz, 8.9 oz

9. Look at the problem below (part number and part letters) and use the clues to complete the number.  
555-abcd

Clue 1: All digits are different

Clue 2: d is the only odd number

Clue 3: a is the only prime number

Clue 4:  $d = 3$

Clue 5:  $c < 8$

Clue 6:  $c - b = a$

**Answer:** The number is 555-2469

10. Look at the problem below (part number and part letters) and use the clues to complete the number.

800-jkmn

Clue 1: All digits are different

Clue 2: Only m, and n are prime

Clue 3: Only j, m, and n are odd

Clue 4:  $n = 5$

Clue 5:  $m < n$

Clue 6:  $j \times j = j$

Clue 7:  $k \times k = k$

**Answer:** The number is 800 – 1035

11. One model plane travels around a loop every 5 minutes. The other plane travels on another loop every 4 minutes. If they begin at the same point at the same time, how much time will pass before they meet at that point again?

**Answer:** 20 minutes

12. One airplane leaves Lynden Pindling International Airport for Cat Island every 15 minutes. Another leaves for Inagua every 20 minutes. If service to both Islands start at 9:15 a.m., when will the airplanes leave the airport again at the same time?

**Answer:** 10:15 a.m.

13. Suppose the Welcome Center gives a discount coupon to every tenth visitor. Every twelfth visitor gets a free T-shirt. Which will be the first visitor to receive both?

**Answer:** 60<sup>th</sup> visitor

14. Lenny, Mark, and Liza are going to jog along 3 different trails at Goodman's Bay. To complete one lap, Lenny takes 6 minutes, Mark takes 12 minutes, and Liza takes 9 minutes. If they start at the same time, how many minutes will it be before they are together again at the starting point?

**Answer:** 36 minutes

15. Which is the more money: 50% of the sum of \$150 and \$50 or 1.5 times the difference \$50 and \$150?

**Answer:** 1.5 times the difference between \$50 and \$150

16. Would you rather have 10 000 000 ten-dollar bills or 100,000 thousand-dollar bills? Explain

**Answer:** Either, both quantities equal \$100 million

17. An accountant wrote 4.527 billion dollars as 4.526 billion dollars. How much was this small mistake worth in dollars? Write your answer in whole numbers.

**Answer:** 1 000 000

18. How many numbers less than 1,000 are there that contain only the digits 5 or 6 or both 5 and 6? A digit may be used more than once.

**Answer:** 14

19. There are two lines of people. One person leaves the shorter line. Eight move from the longer to the shorter line. There are now 10 people in each line. How many started in each line?

**Answer:** the lines had 18 people and 3 people

20. Ian is going away. He has budgeted \$35 each day for food. What is a reasonable amount to budget for total food costs if he goes away for three weeks?

**Answer:** Sample answer; \$800

21. Paul has invited 221 people to a party. All but 33 who people accepted actually attended. Half of the people who attended brought a friend. How many people came?

**Answer:** 276

22. A number  $n$  increases by 29 when it is rounded to the nearest hundred.  $N$  decreases by 1 when rounded to nearest ten. If  $n$  is between 400 and 500, what is  $n$ ?

**Answer:** 471

23. An elevator has a weight capacity of 13 adults. When 9 adults and 10 children get on the elevator it is a full capacity. Using 150lb as the average weight of an adult, estimate the average weight of a child.

**Answer:** 60lb

24. The sum of five decimals is 25.0. Each decimal is 0.1 greater than the one that precedes it on the number line. What are the decimals?

**Answer:** 4.8, 4.9, 5.0, 5.1, 5.2

25. Subtracting a number from 30 gives the same result as adding the number to 18. What is the number?

**Answer:** 6

26. Ben follows a pattern of pushes up each week. From Week 1 to Week 6 he does 0, 20, 10, 30, 30 and 40 push ups. When will he be doing 70 and 80 push ups?

**Answer:** week 12 and week 14

27. Write +, -, or  $\times$  in each box:

$$12 \square 6 \square 3 =$$

How many different whole numbers can you express? What are they?

**Answer:** 9 different numbers

28. What is the greatest number you can make using two different operations and the numbers 25, 40, and 6?

**Answer:** 1240

29. A number is doubled and the product is increased by 10. Then 3 is subtracted from the result. The final number is 57. What is the number that was doubled?

**Answer:** 25

30. Bus fare to and from school is \$1.00 each week. Fifteen students decide to save money by walking. If they make the round trip five days a week, estimate how many weeks it will take them to save \$1 500

**Answer:** about 20 weeks

31. What is the value of DE?

ABC

X DE

EEE

ABCE

ABCE

**Answer:** 10

32. The product of 12.5 and another decimal number is greater or equal to 1. What is the least value the other decimal can be?

**Answer:** 0.08

33. The difference between two numbers is 4 less than their sum. One number is one less than the other number. What are the two numbers?

**Answer:** 2 and 3



34. 4 is how many times as great as the product of  $0.2 \times 0.2$ ?

**Answer:** 100

35. Harvey made 24 pounds of tamarind sauce. He wants to fill an equal number of 4 pound jars and 2 pound jars with the tamarind sauce. How many of each size will he need?

**Answer:** 4 of each size jar

36. A small plant grew 2.5 cm in 100 days. At this rate, about how much will the plant grow in 3 years?

**Answer:** 27 cm

37. George drove 310 miles on 16 gallons of gas. He has 3 more gallons of gas in his tank. Can he make it 62 miles to the next gas station? Explain using estimation.

**Answer:** No. He is getting about 20 miles per gallon so  $3 \times 20 = 60$

38. Find the dividend, divisor, and quotient for the 8<sup>th</sup> problem in the series. (Hint: Carry out the divisions to find the pattern)

$2 \div 2$ ;  $36 \div 3$ ;  $492 \div 4$ ;  $6,170 \div 5$ ;  $74,070 \div 6$ .

**Answer:** 111 111,  $102 \div 9 = 12$  345 678

39. Charlene divided a number by a 2-digit divisor and got a quotient of 99 R 98. What is the divisor? What is the dividend?

**Answer:** 99; 9,899

40. A broken calculator always gives a quotient which is 10 times the real quotient. How would you need to enter this problem to have the calculator show the correct answer?  $3793.62 \div 46$

**Answer:**  $379.362 \div 46$  or  $3,793.62 \div 460$

41. Each cookie from a 24 –oz box of cookies weighed 0.8 oz. A new box with 10 fewer cookies also weighs 24 oz. How much heavier is a cookie from the new box than a cookie from the first box?

**Answer:** 0.4 oz heavier

42. If this pattern continues, what will be the letter in the 40<sup>th</sup> position?

Monday Monday Monday .....

**Answer:** d

43. If M is not 0 or 1, find the value of M if  $3(M + M) = 3(M \times M)$ .

**Answer:**  $M = 2$

44. Tim has 5 more blue ties than half the number of his red ties. He had 3 more yellow ties than one quarter the number of his blue ties. He has 6 red ties. How many ties of each color does he have?

**Answer:** 6 red, 8 blue, 5 yellow

45. Suppose a person bought an antique chair for \$40, sold it for \$45, bought it again for \$50, and sold it again for \$55. How much profit was earned?

**Answer:** \$10

46. Guess and check to find the missing numbers in this data set. The mean of the data set is 105. The mode is 108. (100, 103, ?, 108, ?)

**Answer:** 107, 108

47. You have 1-lb, 10-lb, and 100-lb cowbells. What is the number of cowbells needed to balance a scale with 185-lb on one side of the balance?

**Answer:** 8 cowbells

48. The sum of four numbers is 40. If a fifth number is added, the mean of the numbers becomes 12. What is the fifth number?

**Answer:** 20

49. Jan is walking up a down escalator. For every 6 steps she walks up, the escalator moves down 2 steps. If there are 28 steps between floors, how many steps will Jan climb to reach the next floor?

**Answer:** 42 steps

50. Choose any number. Subtract 3. Multiply by 4. Divide by 2. Add 6. Divide by 2. Try other numbers. What do you find? Why do you think that is?

**Answer:** the answer is always the number with which you start

51. One April 15, Kara planted a seed that will grow at a rate of 4 cm every 15 days. What will be the height of her plant on July 4?

**Answer:** greater than 20 cm. but less than 24 cm.

52. Use four 4s and any operations to make the number 2.

**Answer: sample answer**

$$\frac{(4 \times 4)}{(4 + 4)}$$

53. One half of Karl's father's age added to one third of his mother's age is 31. His father is 38 years old. Karl was born when his mother was 25 years old. How old is Karl?

**Answer:** 11 years old

54. A fraction is equivalent to  $\frac{1}{2}$ . Its numerator is a multiple of 5 and its denominator is between 21 and 39. What is the fraction?

**Answer:**  $\frac{15}{30}$

55. Find two equivalent fractions, A and B. A's numerator is 3 times B's numerator. A's denominator is 36. B's numerator is 5.

**Answer:**  $A = \frac{15}{36}$ ;  $B = \frac{5}{12}$

56. The Bahamian Prime Ministers Pindling and Ingraham were elected in the only years between 1789 and 2000 that were divisible by 2, 3, 4, 5, 6, 9, and 10. What are the years? (Hint: Elections occur every 4 years, and the year 2000 is an election year.)

**Answer:** 1800 and 1980

57. Pat has \$25 to buy a pair of kneepads and a pair of elbow pads. Kneepads cost \$7.59 each. Elbow pads cost \$6.99 each. How much more does she need?

**Answer:** \$4.16

58. Put these numbers in order from least to greatest.

5, 2, 0.5, 0.5, 0.2

**Answer:** 0.2, 0.5, 0.5, 2, 5

59. What is the smallest number that is divisible by each of the first three prime numbers?

**Answer:** 30

60. What's the number? It is a multiple of 5. It is a factor of 50. Its tens digit is 3 less than its one's digit.

**Answer:** 25

61. Larry has some flamingoes and rabbits. He counts 16 heads and 42 legs in the barnyard. How many of each animal does he have?

**Answer:** 5 rabbits and 11 flamingoes

62. Clock A rings every 9 min. clock B rings every 12 min. clock C rings every 20 min. All the clocks rang at noon. When is the next time all 3 will ring at the same time?

**Answer:** 3 p.m.

63. Nobody knows how old Aunt Helen is but she gave a few hints. She had passed  $\frac{1}{20}$  of her life before she started school. She spent  $\frac{3}{20}$  of her life in school; She worked for  $\frac{1}{10}$  of her life before she got married. She was married for  $\frac{2}{5}$  of her life. Her husband died after  $\frac{7}{10}$  of her life.

From reading Uncle Harry's gravestone you find out that she has been a widow for 24 years. How old is Aunt Helen?

**Answer:**  $(\frac{3}{10}) * ? = 24$  and  $24 / (\frac{3}{10}) = 80$ . Aunt Helen is 80 years old.

64. An example of five consecutive even numbers is 10, 12, 14, 16, and 18. Find five consecutive even numbers whose sum is 450.

**Answer:** 86, 88, 90, 92, 94

65. Which of these numbers has the least number of different prime factors? Explain how you know.  
360 810 1 000

**Answer:** 1 000

66. Find the missing denominators so that the sums of these fractions is 1.

$$1/\square + 2/\square + 3/\square + 4/\square = 1$$

**Answer:** Answers may vary. Sample answer: the denominator of each fraction is 10

67. Ty is ordering pizza for a party. Each person will eat  $3/8$  of a pizza. No slices will be left over. What is the least number of pizzas he should order?

**Answer:** 3 pizzas

68. A and B are mixed numbers. B is greater than A. When you round each to nearest whole number and add them together, the sum of the rounded numbers is 10. Find the numbers.

**Answer:** sample number: A =  $3 \frac{4}{5}$  and B =  $5 \frac{3}{4}$

69. Wendy received scores 5, 5.9, 5.7 and 6 from four judges. What score did she receive from a fifth judge if her average score was 5.7?

**Answer:** 5.9

70. The numerator of each of four fractions is 1. Each denominator is a different number. Name the fractions.

**Answer: sample answer:**  $1/12, 1/6, 1/4, 1/2$

71. Each pair of fractions has a sum of 1. Find the missing denominators.

$$\frac{3}{4} + \frac{3}{\quad} = 1 \quad \frac{4}{5} + \frac{4}{\quad} = 1$$

$$\frac{5}{6} + \frac{5}{\quad} = 1 \quad \frac{6}{7} + \frac{6}{\quad} = 1$$

**Answer:** 12; 20; 30; 42

72. The sale price of a shirt is the regular price minus  $1/5$  of the regular price. What fraction of sale price will be equal to the discount received?

**Answer:**  $1/4$

73. Theo has \$1.00 in five cents and ten cents. He has twice as many five cents as ten cents. How many five cents does he have? How many ten cents?

**Answer:** 5 ten cents and 10 five cents

74. Find  $a + b$ . write your answer in simplest form.

$$\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} = a$$

$$\frac{1}{4 \times 5} + \frac{1}{5 \times 6} = b$$

**Answer:**  $5/6$

75. Anne gave  $\frac{1}{3}$  of her stamps to Mary,  $\frac{1}{5}$  to Lucy, and her 7 remaining stamps to Leah. How many stamps did Anne give away?

**Answer: 15 stamps**

76. Find the missing members of this sequence.

$4\frac{1}{6}, 2\frac{5}{6}, 4\frac{1}{2}, 6\frac{1}{6}, ? ?$

**Answer:  $7\frac{5}{6}, 9\frac{1}{2}$**

77. Half of 36 students brought some food to school. Half of those who brought food brought some fruit. How many did not bring fruit?

**Answer: 27 students**

78. Jeff multiplied a fraction by itself to get product P. He then multiplied P by 18 to get a product of 2. What is the fraction?

**Answer:  $\frac{1}{3}$**

79. Alex made two equal groups of pears. He began with a number between 60 and 70 pears. One group was for a pie. He gave away  $\frac{3}{8}$  of the other group. How many pears did he begin with?

**Answer: 64**

80. Of A, B, and C, two numbers are fractions and one is a mixed number. If  $A \times B = C > B$ , and  $C < A$ , then which number is the mixed number? Explain.

81. A is a whole number and B is a fraction, where  $A \times B = C$  and  $A \div B = D$ . Rank A, B, C, and D from greatest to smallest. Explain using examples.

**Answer:  $D > A > C > B$ .** answer will vary. Check student's examples.



82. The gauge in Ted's tank is one 1/8 Gas cost \$1.50 a gallon. The tank holds 18 gallon. What will it cost Ted to fill the tank?

**Answer:** \$23.50

83. Angela is cutting shelves from 14-ft board. Each cut takes her 1 1/2 minutes. How many shelves will she make if she spends 9 minutes sawing?

**Answer:** 7 shelves

84. Jed was on a plane trip. Halfway into his flight, Jed began reading his book. When he stopped reading, the distance remaining in the flight was half the distance flown when he was reading. For what fraction of the trip was Jed reading?

**Answer:** 1/3

85. Find the value of A,B, C, and D. then complete the addition sentence.

$$\begin{array}{r} A \ BCD \\ + C \ ABC \\ \hline 13 \ 986 \end{array}$$

**Answer:** A = 7, B = 2, C = 6 ; D = 0; 13 986

86. When rounded to nearest hundredth, 8/9 is 0.89. find another fraction that has the same digits in both the fraction and the rounded decimal.

**Answer:** 3/8 = 0.38

87. Which is the pattern used for these numbers? 15, 12, 13, 10, 11, 8, 9

$$+ 1, - 3 \quad + 3, - 1 \quad - 3, + 1$$

88. Tanya has 56 marbles. Billy has 24 more than Tanya, and Jerry has 5 more than Billy. How many marbles do they have in all?

**Answer:** 201

89. Mr. Sands decided to grow a garden so he could make salad. He wants to make it 10.1 m long and 4.2 m wide. However, in order to avoid Bugs Bunny from entering his garden he must make a fence surrounding the garden. He decides to make the fence 11.2 m long and 5.0 m wide. What is the area between the fence and the garden?

**Answer:** 13.58 m<sup>2</sup>

90. If you saved \$2.00 on January 1, \$4.00 on February 1, \$6.00 on March 1, \$8.00 on April 1, and so on, how much money would you save in one year?

**Answer:**  $2 + 4 + 6 + 8 + 10 + 12 + 14 + 14 + 18 + 20 + 22 + 24 = \$156.00$

91. Scooby Doo is thinking of two numbers. Their greatest common factor is 6. Their least common multiple is 36. One of the numbers is 12. What is the other number?

**Answer:** The other number is 18.

92. Melissa made a list of all the whole numbers between 1 to 100. How many times did she write the number 2?

**Answer:** 19

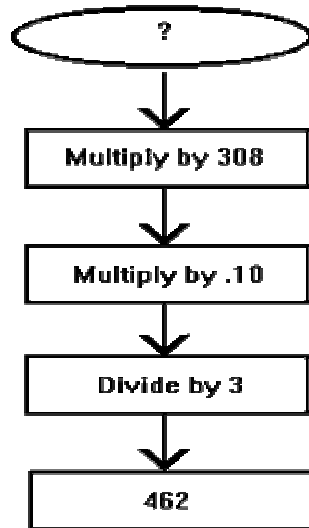
93. Henny passed around a basket of scarlet plums to the girls at her party. Before the party she ate 5 scarlet plums and gave a friend 3. Eight girls arrived at the party. The first girl took a scarlet plum, the second girl took 3 scarlet plums, the third girl took 5 scarlet plums and so on. After the last girl took her scarlet plums, the basket was empty. How many scarlet plums were in the basket at the beginning?

**Answer:** 72

94. Rob wanted an allowance. His father gave him a choice of getting it on a weekly or on a daily basis. He said he would either pay him \$1.25 a week or pay him in the following manner for a week: On Monday he would give him \$0.01; On Tuesday \$0.02; On Wednesday \$0.04 and on through Sunday. What would you tell Rob to do so he can get more allowance?

**Answer:**  $.01+.02+.04+.08+.16+.32+.64 = \$1.27 > \$1.25$   
Rob should ask for a daily allowance.

95. What is the number you started with?



**Answer:**  $(462 * 3) / 0.1 = 13860 - 13860 / 308 = 45$

96. Carpet World is having a sale and Mrs. Black is looking for some carpet for her living room. Her living room is 4m by 5m. How much will it cost her to do this at sale price?

**CARPET SALE**  
Regular \$9.99 square metre  
**Now on Sale for 20 percent off**

**Answer:** Area =  $4\text{m} \times 5\text{m} = 20\text{m}^2$

$\$9.99/\text{m}^2 \times 20\text{m}^2 = \$199.80 \times .8 = \$159.84$

97. Mrs. Archer's house had  $100\text{m}^2$  of living space. Then he added a room that was 4m by 5m. What was the fractional increase of living space? What was the percent of increase in living space?

**Answer:**  $4\text{m} * 5\text{m} = 20\text{m}^2$

$$20\text{m}^2/100\text{m}^2 = 1/5 = 20 \text{ percent}$$

98. The magician said, "The average of seven numbers is 49. If 1 is added to the first number, 2 is added to the second number, 3 is added to the third number and so on up to the seventh number", what is the new average?

**Answer:**  $49 + (1 + 2 + 3 + 4 + 5 + 6 + 7)/7 = 49 + 4 = 53$

99. The peel of a banana weighs about  $1/8$  of the total weight of the banana. If you buy 3 kg of bananas at 1kg for \$0.60, about how much are you paying for the banana peel? For the banana itself? Round to the nearest cent.

**Answer:** \$0.23 is spent on the peel.

$$\$1.80 - \$0.23 = \$1.57 \text{ on banana.}$$

100. The number of hours that were left in the day was one-third of the number of hours already passed. How many hours were left in the day?

**Answer:** 9 hours left =  $1/3$  (15)      6 hours left =  $1/3$  (18)  
9 is not equal to 5              6 hours = 6 hours

6 hours were left in the day.



# **Rubrics**

## **Primary School Mathematics**

## REPORT RUBRIC

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Topic	Totally unrelated	Remotely related	Somewhat relevant	Directly relevant	
Organization	Not organized, events make no sense	Some organization, events jump around, start and end are unclear	Organized, events are somewhat jumpy	Good organization, events are logically ordered, sharp sense of beginning and end	
Quality of Information	Unable to find specific details	Details are somewhat sketchy	Some details are non-supporting to the subject	supporting details specific to subject	
Grammar & Spelling	Very frequent grammar and/or spelling errors	More than two errors	Only one or two errors	All grammar and spelling are correct	
Interest Level	Needs descriptive words	Vocabulary is constant, details lack "color"	Vocabulary is varied, supporting details need work	Vocabulary varied, supporting details vivid	
Neatness	Illegible writing, loose pages	Legible writing, some ill-formed letters, print too small or too large, papers stapled together	Legible writing, well-formed characters, clean and neatly bound in a report cover, illustrations provided	Word processed or typed, clean and neatly bound in a report cover, illustrations provided	
Timeliness	Report handed in more than one week late	Up to one week late	Up to two days late	Report handed in on time	
				Total	

**ARTbeat@school**

<http://www.sdcoe.k12.ca.us/score/actbank/reportrub.html>

## GROUP DISCUSSION SCORING GUIDE

Teacher Name: \_\_\_\_\_

Student Name: \_\_\_\_\_

CATEGORY	4	3	2	1
Contributions	Routinely provides useful ideas when participating in the group and in the group discussion. A definite leader who contributes a lot of effort.	Usually provides useful ideas when participating in the group and in classroom discussion. A strong group member who tries hard!	Sometimes provide useful ideas when participating in the group and in classroom discussion. A satisfactory group member who does what is required.	Rarely provides useful ideas when participating in the group and in classroom discussion. May refuse to participate.
Attitude	Never is publicly critical of others. Always has a positive attitude about the task (s).	Rarely is publicly critical others. Often has a positive attitude about the task (s).	Occasionally is publicly critical of others. Usually has a positive attitude about the task (s).	Often is publicly critical of the project or others. Often has a negative attitude about the task (s).
Working with Others	Almost always listen to, shares with, and supports the efforts of others.	Usually listens to, shares with, and supports the efforts of others.	Often listens to, shares with and supports the efforts of others.	Rarely listens to, shares with, and supports the efforts of others.
Effort	Participation reflects student's best efforts.	Participation reflects a strong effort from this student.	Participation reflects some effort from this student.	Participation reflects very little effort on the part of this student.
CATEGORY	4	3	2	1
Contributions	Routinely provides useful ideas when participating in the group and in classroom discussion. A definite leader who contributes a lot of effort.	Usually provides useful ideas when participating in the group and in classroom discussion. A strong group member who tries hard!	Sometimes provide useful ideas when participating in the group and in classroom discussion. A satisfactory group member who does what is required.	Rarely provides useful ideas when participating in the group and in classroom discussion. May refuse to participate.

Rubric Made Using: RubiStar (<http://rubistar.4teachers.org>)

### COOPERATIVE LEARNING RUBRIC

	1	2	3	4
Contribution to group goals	Works toward group goals only when prompted	Works toward group goals with occasional prompting	Works toward group goals without occasional prompting; accepts and fulfills individual role within group	Consistently and actively works toward group goals; willingly accepts and fulfills individual role within group
Consideration of others	Needs occasional reminders to be sensitive to the feelings of others	Shows sensitivity to the feeling of others	Shows and expresses sensitivity to the feelings of others; encourages the participation of others	Shows sensitivity to the feelings and learning needs of others; values the knowledge, opinion, and skills of all group members and encourages their contribution
Contribution of knowledge	Contributes information to the group only when prompted	Contributes information to the group with occasional prompting or reminding	Contributes knowledge, opinions, and skills without prompting or reminding	Consistently and actively contributes knowledge, opinions, and skills without prompting or reminding
Working and sharing with others	Participates in needed changes when prompted and encouraged; always or often relies on others to do the work	Participates in needed changes with occasional prompting; often needs reminding to do the assigned work	Willingly participates in needed changes; usually does the assigned work and rarely needs reminding	Helps the group identify necessary changes and encourages group action for change; always does the assigned work without having to be reminded

Signatures and comments:
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### CLASS DEBATE RUBRIC

Category	Excellent	Good	Satisfactory	Needs Improvement
Information	All information was accurate and clear	Most information was accurate and clear	Most information was accurate and clear, but not usually thorough	Information had several inaccuracies or was usually unclear
Rebuttal	All counter-arguments were accurate, relevant, and strong	Most counter-arguments were accurate, relevant and strong	Most counter-arguments were accurate, and relevant, but several were weak	Counter-arguments were not accurate or relevant
Organization	All arguments were logical and clearly followed a premise	Most arguments were logical and clearly followed a premise	Arguments were logical, but did not always follow a premise	Arguments were illogical and did not follow a premise
Understanding of Topic	The team clearly understood the topic fully and presented convincingly	The team clearly understood the topic and presented with ease	The team understood the main points of the topic and presented those well	The team did not exhibit an adequate understanding of the topic
Respect for Other Team	Showed high respect for other team in language, responses, and body language	Showed good respect for other team in language, responses, and body language	Showed moderate respect for other team in language, responses, and body language	Language, responses, and body language were consistently disrespectful

**File:///Andromeda/Desktop%20Folder/favorites/Education/...tro\_project/content/html/information/debate\_rubic.html(3/26/2002 10:36:16PM)**

## JOURNAL RESPONSE AND COMPREHENSION RUBRIC

Use this rubric to assess students' abilities to complete the journal activities assigned for this lesson. Share this assessment with students prior to completing the journal-writing lesson so they will understand how they will be assessed. You can also use the rubric as a basis for discussion and feedback with each student.

Student name: \_\_\_\_\_

Date: \_\_\_\_\_

1. The student writes journal responses in complete sentences. \_\_\_\_\_
2. The student writes three or more sentences to answer questions. \_\_\_\_\_
3. The student responds to questions by self-questioning, retelling, predicting, \_\_\_\_\_
4. The student's experiences and opinions are clear. \_\_\_\_\_
5. The student works with a peer to share journal responses and to develop a combined response when requested. \_\_\_\_\_

### Scale:

Excellent 4	Very Good 3	Fair 2	Poor 1
The student completes the task with no major errors.  The student demonstrates a full understanding of the concepts.	The student completes the task with only a few major errors and some minor errors.  The student demonstrates a strong understanding of the concepts.	The student fails to complete the task with some major errors and many minor errors.  The student has difficulty understanding the concepts.	The student fails to complete the task.  The student does not understand the concepts.

Include anecdotal notes in the space below:

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# **Children's Literature**

## **Primary School Mathematics**

**CHILDREN'S LITERATURE FOR MATHEMATICS**

<b>TITLE</b>	<b>AUTHOR</b>	<b>ISBN NUMBER</b>
Two of Everything	Lilly Toy Hong	0-8075-8157-7
The Crayon Counting Book	Pam Munoz Ryan and Jerry Palotta	8-88106-953-1
The M& Ms Counting Book	Barbara Barbieri McGarth	0-88106-853-5
Seven Little Hippos	Mike Thaler	0-671-89907-4
Five Little Ducks	Pamela Papacone	1-55858-473-0
Nine O'Clock Lullaby	Marilyn Singer	0-06-443319-6
The Go-Around Dollar	Barbara Johnston Adams	0-02-700031-1
The Very Hungry Caterpillar	Eric Carle	0-399-20853-4
Ten Black Dots	Donald Carews	0-688-13574-9
What Comes in 2's, 3's and 4's?	Suzanne Aker	0-671-79247-4
The King's Chessboard	David Birch	0-14-054880-7
Sea Squares	Joy Hulme	1-56282-520-8
Frog Counts To Ten	John Lieber	1-56294-698-6
Clocks and More Cocks	Pat Hutchins	0-689-71769-5
Monster Money Book	Lareen Leedy	0-8234-0922-8
2x2= Boo	Lareen Leedy	0-8234-1190-7
The Greedy Triangle	Marilyn Burns	0-590-48991-7
GrandfatherTang's Story	Ann Tompert	0-517-57487-X
A Quarter From The Tooth Fairy	Caren Holtzman	0-590-26598-9
Bat Jamboree	Kathi Appelt	0-688-13883-7
Anno's Counting Book	Mitsumasa Anno	0-06-443123-1
Counting on Frank	Roger Clement	0-8368-0358-2
Seven Blind Mice	Ed Young	0-590-46971-1
Counting by Kangaroos	Joy N. Hulme	0-7167-6602-7
Sea Sums	Joy N. Hulme	0-7868-0170-0
Mother Goose Math	Emily Boland	0-670-87569-4
So Many Circles, So Many Squares	Tana Hoban	0-688-15165-5 TR
Spaghetti and Meatballs for All	Marilyn Burns	0-590-94459-2

### CHILDREN'S LITERATURE FOR MATHEMATICS

TITLE	AUTHOR	ISBN NUMBER
In The Next Three Seconds	Rowland Morgan	0-525-67551-5
The Shape of Things	Dayle Ann Dobbs	1-56402-698-1
Anno's Counting House	Mitsumasa Anno	0-399-20896-8
Math Counts Length	Henry Pluckrose	0-516-45453-6
Five Little Monkeys Jumping On a Bed	Eileen Christlow	0-395-55701-1
Five Little Monkeys Sitting in a Tree	Eileen Christlow	0-395-66413-6
A Remainder of One	Elinor J. Pinczes	0-395-69455-8
Notorious Numbers	Paul Giganti, Jr.	1-56785-006-5
10 For Dinner	JoEllen Bogart	0-590-73173-4
Each Orange Had 8 Slices	Paul Giganti, Jr.	0-688-13116-6
How Big Is a Foot	Rolf Myller	0-440-40495-9
Math Counts Weight	Henry Pluckrose	0-516-45460-9
Math Counts Pattern	Henry Pluckrose	0-516-45455-2
Math Counts Sorting	Henry Pluckrose	0-516-45458-7
Even Steven and Odd Todd	Kathryn Cristaldi	0-590-22715-7
Harriet's Halloween Candy	Nancy Carlson	0-87614-850-X
The Button Box	Margarette S. Reid	0-14-055495-5
From One to One Hundred	Teri Sloat	0-14-055643-5
A Grain of Rice	Helena Claire Pittman	0-553-15986-0
How The Second Grade Got \$8,205.50 to Visit the Statue Of Liberty	Nathen Zimelman	0-8075-3431-5
Neighborhood Soup	JoAnne Nelson	0-8136-4266-3
Ten Sly Piranhas	Victoria Chess	0-8037-1200-6
Sadako and the Thousand Paper Cranes	Eleanor Coerr	0-440-47465-5
The Paper Crane	Molly Bang	0-688-07333-6
Anno's Mysterious Multiplying Jar	Masaichiro & Mitsumasa Anno	0-399-20951-4
More Than One	Miriam Schlein	0-688-14103-XLE
One Hundred Hungry Ants	Elinor Pinczes	0-395-63116-5
A Giraffe And A Half	Shel Silverstein	0-06-025655-9

**CHILDREN’S LITERATURE FOR MATHEMATICS**

<b>TITLE</b>	<b>AUTHOR</b>	<b>ISBN NUMBER</b>
17 Kings and 42 Elephants	Margaret Mahy	0-8037-0458-5
How Much Is A Million?	David M. Schwartz	0-590-43614-7
If You Made A Million	David M. Schwartz	0-688-07017-5
Somebody and the Three Blairs	Marilyn Tolhurst	0-531-05876-6
Sadako	Eleanor Coerr, Ed Young	0-399-21771-1
The King’s Commissioners	Aileen Freedman	0-590-48987-9
Half and Half	JoAnne Nelson	0-8136-4311-2
The Great Graph Contest	Loreen Leedy	0-8234-2029-9
How Do You Know What Time it is?	Robert E. Wells	0-8075-7940-8
Fraction Fun	David A. Adler	0-8234-1259-8
Anno’s Mysterious Multiplying Jar	Masaichiro and Mitsumasa Anno	0-6981-1753-0
Remainder of One	Elinor J.Pinczes	1-6182-5077-8
Pigs Will Be Pigs: Fun with Math and Money	Amy Axelrod	0-6898-1219-1
Sir Cumference and the Great Knight of Angleland: A Math Adventure	Cindy Neuschwander	1-5709-1166-5
Fraction Action	Loreen Leedy	9-7808-2341-109-2
The Math Chef	Joan D’Amico and Karen EichDrummond	0-4711-3813-4
The Amazing Impossible Erie Canal	Cheryl Harness	9-7806-8982-584-2
Piece = Part = Portion: Fractions = Decimals = Percents	Scott Gifford	1-58246-102-3
Sir Cumference and the Sword in the Cone: A Math Adventure	Cindy Neuschwandwander	5-709-1601-2
Fair is Fair	Jennifer Dussling	13: 9-7806-1379-279-0
Measuring Penny	Loreen Leedy	0-6702-4133-4
Grandfather Tang’s Story: A Tale Told with Tangrams	Ann Tompert	0-5178-8558-1
The Grape of Math	Greg Tang	0-4392-1042-9
Keep Your Distance!	Gail Herman	9-7806-1339-333-1
One is a Snail: Ten is a Crab	April Pulley Sayre	9-7807-6362-631-0
Go Fractions!	Judith Bauer Stamper	9-780-4484-3113-0
Hottest, Coldest, Highest, Deepest	Steve Jenkins	0-6184-9488-X

The background of the page is a light teal color with several stylized birds in flight, rendered in a darker teal and a light yellow color. The birds are scattered across the page, some in the foreground and some in the background, creating a sense of movement and depth.

# **Materials List**

## **Primary School Mathematics**

### **Grades 4-6**

**PRIMARY SCHOOL MATHEMATICS  
MATERIALS LIST  
GRADE 4**

The following is a list of materials that should be **available** to every grade 4 Classroom in the Bahamas. Ultimately, we should strive to have each grade 4 **equipped** with these items.

QUANTITY	MATERIALS	QUANTITY	MATERIALS
15	Classroom set fraction calculators		An assortment of math-related games
* 15	Geoboards with rubber bands		Hundreds chart
1	Overhead geoboard	*	Number line
1	Overhear projector		Multiplication chart
15	Sets of number cubes	3	Balance scales
15 each type	Spinners-varied types	1	Bathroom scale
15	Metre sticks	1000	Centicubes
	Overhead transparencies	*15	Sets of tangrams
1000	Linking cubes	1	Overhead set of tangram
15	Sets Cuisenaire rods	1	Overhead fraction calculator
1	Overhead set of Cuisenaire rods	*15	Sets of pentominoes
*15	Sets of fraction circles and overhead pieces	1	Overhead set of pentominoes
	Scissors	500	1-Inch cubes
*500	Counters	*	Addition, subtraction, multiplication and division flash cards



**PRIMARY SCHOOL MATHEMATICS  
MATERIALS LIST  
GRADE 4**

The following **consumables** should be available in every grade 5 classroom:

QUANTITY	MATERIALS	QUANTITY	MATERIALS
*	Old magazine, catalogues and newspapers		Pipe cleaners
	Index cards		Rope
	Graph paper	*	String
*	Egg cartons	*	Thread
*	Boxes of all sizes	*	Straws
	Coloured pencils	*	Toothpick
*	Beads	*	Rice
*	Buttons	*	Macaroni
*	Wax paper		Blank cassette tapes
	Tracing paper		Paper clips

- **These items can be obtained inexpensively, made, or collected.**

**PRIMARY SCHOOL MATHEMATICS  
MATERIALS LIST  
GRADE 5**

<b>QUANTITY</b>	<b>MATERIALS</b>	<b>QUANTITY</b>	<b>MATERIALS</b>
1	Overhead projector	*	Individual student sets of counters
	Hundreds chart	15	Sets of Cuisenaire rods
½ box	Overhead blank transparencies		A collection of Math-related games and puzzles
*5 sets	Multiplication flash cards		Classroom set of fraction calculators
5	Decks of cards	1	Overhead fraction calculator
*15	Sets of fraction circles	1000	Centicubes
1	Classroom Hands-On Equations Kit	15	Sets of pattern blocks (about 5 tubs)
15	Sets of number cubes and dice		Digital display clock
*	Display number line	15	Miras
*15	Geoboards	15 each type	Spinners
1	Overhead geoboards	*15	Sets of tangrams
	Place value chart	1	Overhead set of tangrams
15	Measuring tapes/rules	500	1-Inch cubes
	Display calendar		An assortment of Math games
	Celsius thermometers	*	Addition and subtraction flash cards
	Individual student compass and protractor	4	Buckets of 2-sided colour counters (200 per bucket)

**PRIMARY SCHOOL MATHEMATICS  
MATERIALS LIST  
GRADE 5**

The following **consumables** should be available in every grade 5 classroom:

QUANTITY	MATERIALS	QUANTITY	MATERIALS
*	Old magazine, catalogues and newspapers		Pipe cleaners
	Index cards		Rope
	Graph paper	*	String
*	Egg cartons	*	Thread
*	Boxes of all sizes	*	Straws
	Coloured pencils	*	Toothpick
*	Beads	*	Rice
*	Buttons	*	Macaroni
*	Wax paper		Blank cassette tapes
	Tracing paper		Paper clips

- **These items can be obtained inexpensively, made or collected.**

**PRIMARY SCHOOL MATHEMATICS  
MATERIALS LIST  
GRADE 6**

The following is a list of materials that should be **available** to every grade 6 classroom in the Bahamas. Ultimately, we should strive to have each grade 6 **equipped** with these items.

QUANTITY	MATERIALS	QUANTITY	MATERIALS
4	Buckets of 2-colour counters (200 per bucket)	*	Sets of multiplication flash cards
1	Overhead projector		An assortment of math games and puzzles
15	Decks of cards	15	Classroom set of fraction calculators
15 of each	Sets of dice/Number cubes	15	Sets of Cuisenaire rods
15 each type	Spinners- various types	10	Metric sticks
*15	Sets of fraction circles	15	Metric rules/tape measures
1 each	Overhead set of fraction circles, tangrams, Cuisenaire rods, fraction calculator	*	Student sets of counters
*5	Tubs of pattern blocks	500	1-Inch cubes
*15	Tangrams	*	Addition and subtraction flash cards
1	Classroom Hands-On Equations kit		Multiplication chart
*	Display number line	*	Multiplication/Division flash cards

**PRIMARY SCHOOL MATHEMATICS  
MATERIALS LIST  
GRADE 6**

The following **consumables** should be available in every grade 6 classroom:

QUANTITY	MATERIALS	QUANTITY	MATERIALS
*	Old newspapers, magazines and catalogues	*	Toothpicks
	Graph cards		Paper clips
*	Empty boxes	*	Egg cartons

**\* These items can be made collected or obtained inexpensively.**

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